MOUNTS AND FRAMES

AND

HOW TO MAKE THEM.

BY

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MOUNTS AND FRAMES.

CHAPTER I.

THE USE AND OBJECT OF MOUNTS.

PERHAPS it may not only save some of my readers' time, but also minimise confusion, if we try at the outset to come to some sort of general understanding as to some of the main objects of the forthcoming chapters under the title of "Mounts and Frames."

First, then, as to those for whom my remarks are chiefly intended. I have in mind many amateur workers who possess a fair stock of patience, irregular intervals of spare time, an average portion of common sense, and a laudable desire to make the best use of a shilling. Unfortunately, many of these live in places more or less isolated from their photographic brothers, and have not many opportunities of obtaining advice by word of mouth. They are willing to make the best use of their position and possessions, and do not

mind a few preliminary failures provided there is a reasonable chance of success. Briefly, then, my chief thought and desire is to help, so far as I can, those who want to help themselves.

To prevent mistakes, and perhaps disappointment, I ask the reader's permission to assume that he knows practically nothing about preparing mounts and making picture frames. Therefore, should he discover me giving him some very stale information I will, once for all, ask him to bear with me for the sake of his less experienced brother. This will, of course, involve many trifling matters being touched upon, and possibly the lengthy description of some very simple operations may tempt the reader to assume that the operations take a long time or are very difficult. But, on the contrary, there is no difficulty which may not be overcome by a few careful preliminary trials, and the time taken is really not long. Furthermore, the question of cost, or rather of saving it, may be of some interest. As a very broad and elastic statement I may, I think, say that I am well within the truth when I put down the out-of-pocket cost of home-made mounts and frames as something less than half the usual trade price. Nor is this to be wondered at, when we remember that the work is of such a nature as to demand a workman of fully average intelli-

gence, with corresponding patience and some taste. Another aspect of the question may here be mentioned. The amateur who employs his spare time in making his own mounts and frames is able to use, not only his old negatives, when cleared of the film, as front glasses, but by a little care and forethought is able to work in his other materials so as to have really very little waste, and also to employ old and spoilt mounts for new pictures. In many such ways he can not only make the best use of his material, but also find a use for what under other circumstances would be inconvenient lumber.

Now, with regard to preparing mounts and mounting prints thereon. Let us try to arrive at some more or less definite principles by asking the pertinent question: What is the use, the object, of a mount? It has been asked: "Why need a photograph have a mount at all, for we seldom see an oil painting with a mount?" Some answer will be found by visiting any large collection of paintings in oil and water colour. The former will probably, without exception, be "close framed," *i.e.*, without any visible mounts. The water colours will in some cases be mounted, in others "close framed." Should the exhibition contain monochrome work, etchings, pencil, chalk, or wash drawings, they will most probably be

mounted, except where the work is of considerable size. Now, since the majority of painters seem practically to agree in the foregoing practices, it is only reasonable to assume that there are some general principles underlying these uses. It would seem as though there were three chief factors —viz., colour, solidity, and size.

Oil paintings are close framed probably (1) because of their size usually being fairly large, at any rate large enough to attract individual attention; also (2) because being in numerous colours there is the great difficulty of finding a mount which would not detract from, rather than harmonise with, the general scheme of colour, and also perhaps (3) because of the solid (*i.e.*, non-transparent) nature of the pigment.

Water colours, (1) when in body-colour (*i.e.*, non-transparent), are usually either framed close, or what comes to the same thing surrounded by a gold flat or mount—this is equivalent to extending the frame inwards until it meets the picture. (2) Again when they are of considerable size, close framing is often employed. But as a general rule (3) the smaller sizes worked by the transparent method (*i.e.*, not body colour) are usually mounted. The nature of the subject also seems to suggest a distinction. Where the subject is chiefly foreground, and the scale is

large, it is often framed close. Or, again, in still-life objects, flowers, fruit, game, etc., etc., close framing is often employed, while, on the other hand, land- and sea-scape "dreamy distance," clouds and atmospheric effects are far more effectively shown when surrounded by a delicate-hued mount.

Monochrome works are—except in the case of large pictures—practically always accompanied by some form of mount, either as a natural plate margin or some form of coloured support.

At the same time every freedom should be given to individual taste and choice. Each picture, be it photograph or painting, should be considered and treated *entirely on its own merits.* In some cases close framing is eminently suitable for photographs —for instance, where the size is considerable, *i.e.*, say 3 ft. by 2 ft. and larger; many interiors of buildings; large heads, where the background is dark; landscapes of foreground objects in large scale of size, etc. But as a general rule most small-size photographs are improved by being suitably mounted. Still it must be admitted that no mount at all is better than an unsuitable one.

The object and purpose of a mount is twofold—viz., (1) to isolate a picture from its surroundings, so as to invite inspection; (2) also to assist to

emphasise its good features, and minimise the defects in the picture. Who has not experienced disappointment at seeing a favourite picture which looked well enough at home on the wall with plenty of spare space round it, and yet, when closely elbowed by a crowd of similar pictures, and in a large and well-lighted room, it seemed to dwindle into insignificance? At home the "cherished work" had the wall all to itself; the result "a walk over." In the exhibition it was only one of a crowd, and "simply nowhere." Again, who has not seen really good work ruined by its mounting—for instance, a purple silver print surrounded by a series of red lines, crossed corners, and other barbarities? Again, a red carbon on a "bronze gilt" mount —a perpetual conflict of gore and butter. Or a delicate snow scene on a very clear white card, resulting, of course, in making the spectator wonder if that very dirty grey stuff can be freshly fallen snow.

I wish to lay the utmost emphasis on the one fundamental principle, viz., to keep always in mind the object and end of your mount and frame. Briefly put, we may say the use of (1) the glass is to keep the picture clean; (2) the frame is to protect it from injury, to isolate it from its surroundings, to harmonise with the general effect;

(3) the mount, to help to isolate the picture from its surroundings, to help the picture, and aid in the general harmony.

The chief points in connection with the choice of a mount are (1) size and proportions, (2) colour, (3) texture.

CHAPTER II.

SIZE AND PROPORTION OF MOUNTS.

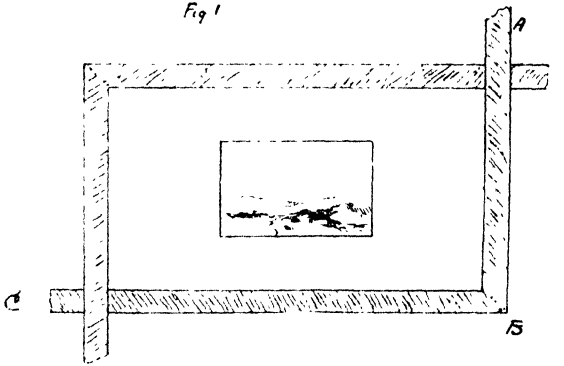
THE considerations of the size, proportion of length to breadth, tint or colour, texture or surface, are so dependent, not only on the picture to be mounted, but also on each other, that the consideration of any one implies or involves an assumption that all the others are either already determined or under examination.

But were we at this point to attempt to discuss all these factors together, nothing short of useless confusion would result to the reader. Hence, for the sake of convenience, we will speak of them seriatim, on the understanding that no one point can in actual practice be safely determined without due regard to all the others.

Let us therefore assume that the *approximate colour* of the mount has been settled, and we now wish to discover what *proportions of length to breadth* of mount margin show off the picture to best advantage. For this purpose we here mention a well-known aid to this end, in case the reader has

ot already *invented* something of the kind for himself. From a piece of stout card or millboard the lid of a dressmaker's box will serve our purpose) cut out a couple of L-shaped pieces, as A, B, C, fig. 1. The longer arm may be 2 ft., the shorter one 18 in. in length, the width being 4 or 6 in. On one surface of each L-shaped piece paste some dull-coloured dark-brown paper.

Fig 1



The sheet of paper, card, etc., from which the mount is to be cut is now laid flat on the table, in a good light. The *properly trimmed* print is laid upon the middle of the paper. The two L-shaped pieces (brown paper upwards) are now moved to and fro until a suitable proportion is discovered. The whole is now covered with a sheet of clean white glass. Then, with a tape, measure the length

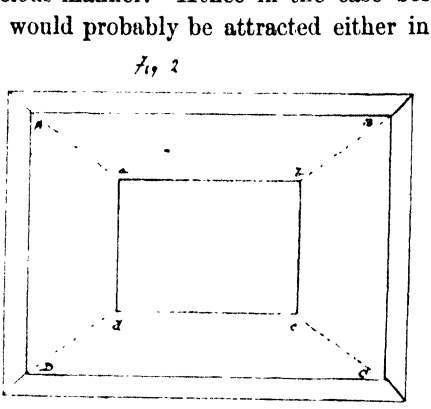
and breadth of the visible mount (showing inside the imaginary frame formed by the L-pieces). An extra inch each way is allowed for any slight error in the subsequent mounting and trimming to get the angles correct, and also for the part of the mount hidden by the "rebate" (or recessed groove of the frame which holds the glass, etc.).

If, in the first instance, the L-shaped pieces are carefully folded at the angle (as shown by the dotted line at B), they may be used again and again, and when so folded occupy very little store room.

Now as to the proportions of length to breadth. It is obvious that what may suit one picture may spoil another, so that each must be considered entirely on its own merits, having regard to the points we desire to emphasise, the defects we hope to minimise, the general sentiment of the subject, and the nature of its general surroundings. There is, however, one general rule as to "what not to do"—viz., to *avoid* (unless for some very strong and special reasons) having the *same* proportions of mount and print. An illustration will make this clear. In fig. 2, *a b c d* represent the proportions of a whole-plate print cut down to six by eight inches. This is surrounded by a margin of three inches above and below, and four inches at each end. Clearly, then, the corners *a c* of the print, and the corners A C of the mount coincide with

one diagonal of the print, while the other corners of the print and mount in the same way fall on the other diagonal. Now we all know that the eye is attracted to lines and rows of points, etc., and tends to follow such lines, often in a very pertinacious manner. Hence in the case before us the eye would probably be attracted either inwards

Fig. 2



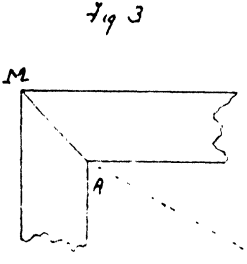
towards the centre of the picture, which unfortunately is often the weakest point and one to which attention is not desired; or the eye is attracted outwards, and with this unhappy result, viz., that attention is drawn to the junction lines (mitres) of the frame. Still more unhappily is this so because the line *a* A is nearly, *but not quite*, in the same direction * as the mitre line A M of the

* These lines will only coincide in direction when a square print is mounted centrally on a square mount.

frame. (See fig. 3.) This tends to make one imagine there is something wrong with the construction of the frame.

From consideration of the foregoing case we may deduce the following important principle—that the corners of the mount and frame should not coincide with the diagonal lines of the picture.

Next we have to determine whether the proportion of length to breadth of mount shall be greater or less than that of the print. In figs. 5 and 4, *a b c d* represent again a print measuring 8 by 6 inches. In fig. 5, E F G H is a mount showing 3 inches above and below, and 3½ at the ends. In fig. 4, K L M N shows a mount with the same margin, viz., 3 inches above and below, but the end space is increased to 5 inches. On comparing the effects of the different sized and proportioned mount space we observe (1) that in fig. 5, where the proportion of length to breadth in the mount is less than that of the print (*i.e.*, the mount is nearer a square than the print is), the print appears a little larger than in fig. 4. Also (2) that the apparent increase of size seems due to



a development in the vertical rather than the horizontal direction. On looking attentively at

Fig 4

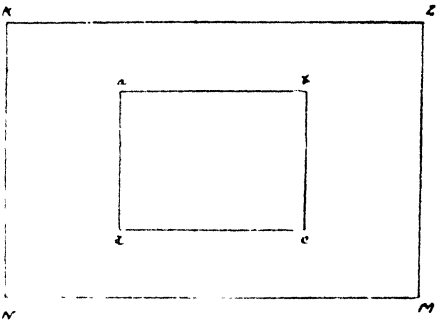
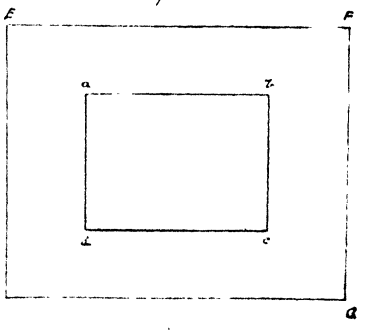


fig. 4, we note (3) that while the actual size of the print seems somewhat smaller than in fig. 5, by

Fig 5



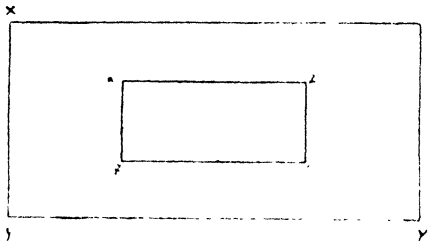
reason of its being contrasted with a larger surrounding space, yet the eye tends to observe and

dwell on the horizontal rather than on the vertical dimensions. Now, on turning the figures "end up," so as to represent a so-called vertical picture, we observe (4) that the mount in fig. 5 does not look quite so nearly an even distance all the way round the print as it did when viewed in the horizontal position; also (5) the print on fig. 5 still looks larger than in fig. 4, but its increase of size seems *now* due to a growth horizontally; while in fig. 4 we note that (6) the distance above and below the print seems somewhat excessive. The practical application of this experiment seems to suggest that where the print is somewhat square (*i.e.*, 8 by 6) and the subject is one in which vertical lines prevail, or where we desire to draw attention to or emphasise vertical lines, as in many architectural subjects, our results will be best obtained by the treatment suggested in fig. 5, *i.e.*, employing a mount in which the proportion of length to breadth is slightly less than that of the print.

Should, however, our subject be, say, shipping with open water, *i.e.*, a number of vertical lines, but with a predominating sense of horizontal expanse, the treatment in fig. 4 would be probably preferable, *i.e.*, of employing a mount which slightly accentuated the horizontal dimensions. Observe that in figs. 4 and 5 we have retained the same space above and below, and only altered the end spaces.

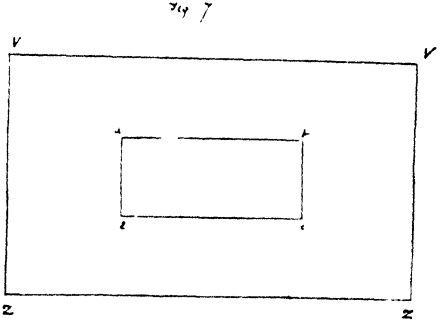
In order to make it more clear that the proportions of the mount exercise important functions

Fig. 6



on the impression of the proportions of the picture we may take another case. In figs. 6 and 7, *a b c d* now represent a print of the proportions 8 by $3\frac{1}{2}$

Fig. 7



(or 16 by 7), and in each case the end space of the mount is the same, viz., five. But in fig. 6 the space above and below is only $2\frac{1}{2}$, while in

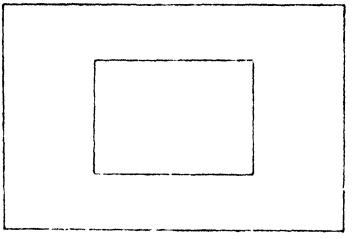
fig. 7 this space is 3½. In comparing the effects, we observe that the print in fig. 6 seems somewhat larger than in fig. 7. Also when they are viewed together side by side the print in fig. 6 seems larger in its vertical dimensions than in fig. 7. But if they are compared when one above the other, that in fig. 7 seems longer than in fig. 6. If now we take a "straight edge," a ruler, straight strip of card, etc., and apply it to the various figs. 4 and 5, so that we get the diagonal lines of the print (corresponding to the dotted lines in fig. 2), we shall see that in fig. 5 the corners of the mount fall in the top and bottom quadrants formed by the diagonals. But in fig. 4 these points have crossed the diagonals and are now in the end quadrants. Similarly on examining figs. 6 and 7 in the same way, we shall find the corners in both these cases are not in the end quadrants. Thus it will be seen that the effects above noted do not depend upon our selecting a proportion for the length and breadth of the mount, larger or smaller than that of the print, but that the effect may be materially modified while yet the proportions increase as the length of the picture increases, and so on. This point may be made clear by putting the matter into numbers. In fig. 4 we have an 8 by 6 print on a mount 18 by 12. The mount is therefore longer in proportion than

the print is. In fig. 5 we have again an 8 by 6 print on a 15 by 12 mount, *i.e.*, on a mount shorter in proportionate length than the print. In fig. 6 we have a print 8 by $3\frac{1}{2}$, on a mount 18 by $8\frac{1}{2}$ Also in fig. 7 the print is 8 by $3\frac{1}{2}$, while the mount is 18 by $10\frac{1}{2}$. In *both* these two last cases the mount is proportionally longer than the print, but its effect is seen more in fig. 6 than in fig. 7.

We have yet to consider the influence of the area of the mount. For the sake of variety let us consider the case of a 7 by 5 print. In figs. 8 and 9 the proportions of the print are as 7 to 5. In fig. 8 the size of the mount is 15 by 10, or an increase of length to breadth as compared with the print. In fig. 9 we have the same size of print, but the proportions of the mount are altered to 17 by 9 (nearly). Thus the actual area of the mount and print in both cases is the same, while in the second case we have a still further increase in the proportion of length to breadth, as compared with the print. On comparing the influence of the two mounts we do not notice any great effect upon apparent size. The majority of observers, however, imagine that the print in fig. 9 seems a little larger than in fig. 8 when both are viewed horizontally; but, when viewed vertically, many seem to see the print in fig. 8 larger than in fig. 9. Comparing the effects on

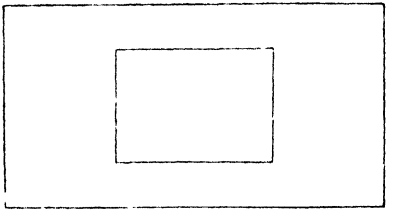
relative dimensions, the proportions of the mount in fig. 9 seem to elongate the print more than in the case of fig. 8 and *vice versa* as to height.

Fig 8



To sum up the result of our experiments (which by the way should be put to practical test by means of the above suggested L-shaped frame

Fig 9.



pieces) : where the interest of the picture is chiefly contained in its horizontal components, these should be accentuated (in moderation and with a nice judgment) by selecting a mount where the pro-

portion of length to breadth is somewhat larger than that of the picture itself.

This applies to the majority of landscapes of the "open-country" class, seascapes, moorland, etc. In figure compositions where the principal figures or majority of components of the group are reclining, the same observation will usually apply. Where the interest is, however, in the vertical direction, *e.g.*, mountain pictures, architectural studies, single standing figures, compositions where dignity and importance are desired for some one or more chief standing or sitting figures, etc., the vertical proportions may be emphasised by reducing the end spaces, and augmenting those above and below the print. Secondly, in the case of pictures where the longer side is in the vertical direction, we observe that we cannot allow so much space above and below the ends as we should be disposed to do were the same sized print to be seen horizontally. In this connection we may suggest that the reader looks at figs. 4, 6, 9 first as horizontal pictures, then as vertical pictures. In the former case, the large spaces at the ends of the print are generally acceptable, but are somewhat excessive for most vertical subjects. We may here take the opportunity of reminding the student that, in *nearly* every case, the print should be placed on the

mount so that while exactly equal marginal spaces are given to the right and left, yet a *little* more marginal space should be allowed below than above. This difference, however, should be only just sufficient to be perceived when special attention is given to it. As a practical instance, when mounting a whole-plate print, 3 in. might be shown above the print, and something between 3¼in. and 3½in. allowed below—

Lastly, in the matter of relative size of mount to print, no rule can be given. But speaking generally—

(1) A small print requires a *relatively* larger mount.

(2) A *very* large mount for a small print tends to dwarf the print.

(3) When the width of mount margin exceeds or equals the actual width of print, the tendency is to render the print insignificant. For instance, a quarter-plate print on a 12 by 9 mount is very apt to become lost by its surroundings.

CHAPTER III.

TEXTURE AND SURFACE.

It may be well to repeat again and again, that while we are compelled by the circumstances of the case, *i.e.*, in writing—to discuss size, proportion, texture, tone, and colour, each separately, yet in actual practice the consideration of them all (taken together) must form the grounds of our ultimate decision. We now come to the question of the "texture" of the mount. For present purposes we may say that this is equivalent to fineness or coarseness of the grain of the paper or card, *i.e.*, the smoothness or roughness of its surface. Take two pieces of drawing paper of the same colour or tint. Let one be smooth, the other rough. Place them side by side against a wall, where good diffused daylight—but not direct sunshine—falls sideways upon them, as in fig. 10, where R is the rough, S the smooth, paper. Along the top place a narrow strip of black or some other very dark paper, B; and along the bottom in the same way arrange a narrow strip of very highly glazed or cream-laid

paper, C L. This latter must be sufficiently smooth to show strong reflected light. The whole group of four papers may now be viewed at different distances and varying angles. A certain position of the spectator may be found, where C L seems to reflect the greatest amount of light, *i.e.*, where its surface seems all shine and glitter. From this

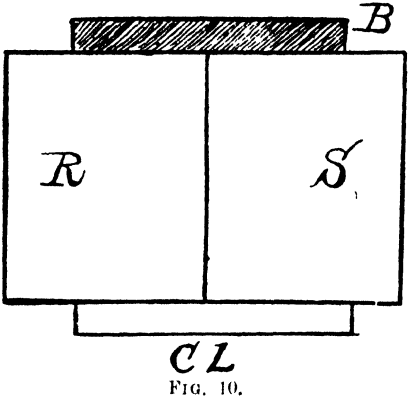


FIG. 10.

point of view S will, of course, reflect more light into the eyes than R does.

The strip, B, which should not be at all "shiny," will act as rough standard for comparison. Thus, any black material, *e.g.*, strip of cloth, tape, ribbon, or blotting-paper dipped in ink will serve our purpose.

At the position of what we may call greatest

reflection, the grain of R will seem most marked, the tops of "hills" catching most light and casting the darkest shadows into the "valleys" of the undulating surface of the paper.

If next we view the group of papers from such a position that our line of sight is perpendicular to their surface, so that S is opposite one eye and R opposite the other, we shall notice that the smooth paper is not so light as it was, and that the rough paper seems lighter than before; also that we do not notice its grained surface so much.

If now we shift the group of papers to a wall facing the window, so that the light falls perpendicularly upon their surface, we may observe, when viewing the group at almost any position, except that of greatest reflection, as indicated by the shine on C L, that (1) we here see the grain of R less than in any other position, because the light falls directly into the valleys of the paper; (2) that R now seems lighter than S; (3) that if we move away from the group to such a distance that we just fail to see the grain of R, *i.e.*, that its surface seems uniform, then it (R) seems to acquire a kind of *luminous bloom*, which we fail to get with S.

Now, we know that when light falls upon an opaque (*i.e.*, non-transparent) substance, such as card or stout paper, it is for the most part divided

into reflected and scattered light. The more there is of one the less there must be of the other. Thus highly polished or very smooth surfaces, *e.g.*, glass, metal, etc., reflect a large proportion of light, so that in the one position, which we have already called that of greatest reflection, their surfaces seem very bright indeed, but in all other positions they seem dark. When, for example, we compare a piece of ordinary smooth glass with a piece of ground-glass (or polished with "frosted" silver), we see that the smooth surface reflects much and scatters little light, while the rougher surface reflects little and scatters nearly all the light falling on it. Gathering up our ideas for practical application, we may say (1) that rough mounts scatter more light and therefore look lighter generally than do smooth ones of the same colour; (2) that the rougher the grain the more important is it that it should not be viewed in oblique or side light, but by a front or acute angle of incident light.

Next we must consider when it is desirable to employ a smooth, a slightly rough, or a very rough surface. If we take half a dozen pieces of paper of varying degrees of roughness, and compare them in pairs, we shall quickly see that, for close observation, it becomes largely a question of contrast. Numbering the smoothest 1, the next 2, and so on

to the roughest 6, and putting 2 and 4 side by side, we see that 2 looks smoother than when viewed alone, while 4 seems rougher than before, and so on. Thus the greater number of degrees between any pair, the more they seem (by contrast) to start apart. Hence, in practice, when we wish to draw attention to the roughness of the grain of a print, all we need do is to mount it on a card of ivory surface, while, on the other hand, if our aim is to keep the grain subdued from notice, we shall select a mount somewhat rougher than the print, but *not* so much so that the print attracts attention to its *comparative* smoothness. Obviously, then, there is some sort of proper relationship between the grain or texture of the print and of its appropriate mount.

In immediate connection with our subject are two other elements which must also be thought of—viz., the actual size of the print, and the distance from which it is to be viewed. These two factors are by nature closely related, seeing that most people of normal eyesight will instinctively go closer to a very small picture, *e.g.*, a quarter-plate print, than to one of medium size, *e.g.*, a 10 by 8 or 12 by 10 ; while when looking at a larger print, measuring, say 24 in. or upwards, they will unconsciously step back a pace or two so as to get the whole picture at a comfortable angle of vision. Hence when

making, for example, a 15 by 12 print we may use a rougher grained paper than we should employ when making a quarter-plate print. Similarly, we may not only employ a rougher surfaced mount for the former than for the latter, but also we may, consistently in the former case, have a greater degree of contrast between the grain of the mount and print than would be desirable in the case of the smaller print, because the larger print and mount being viewed at a greater distance we should not notice to any important extent the grain either of the print or mount; nor should we at this greater distance be able to draw any exact conclusions as to their *relative* grain or texture. It follows then that our aim must be in all cases so to adjust the texture or degree of roughness of the mount to that of the print, that we may not attract attention away from the print. Nor must we have so much contrast that any attention is drawn away from the subject matter of the print itself.

A very rough mount *may*, under very exceptional cases, be quite suitable for a very smooth or very small print, and *vice versa*, but the exceptional case only serves to warn the thoughtful student that no hard and fast rule can be laid down. Good art never yet grew strong on excess or eccentricity, nor will photographers make poor prints into pictures

by *outre* mounts. At the same time due consideration and discriminating application of some of the above conclusions *may* very materially assist in making the best of the good points and subduing the defects of what is only a moderately good print.

CHAPTER IV.

COLOUR (TONE).

We now come to that which is on all hands admittedly the greatest difficulty in the selection of a suitable mount—viz., its colour. We may, I think, best do this by separating our subject into two convenient sub-divisions—(*a*) the question of lightness or darkness, *i.e.*, tone, apart from its colour-tint; (*b*) the question of colour proper, or tint.

It will be convenient to study *a* first, because this is our entire case so long as we confine our attention to black and white prints, and black, white, or a mixture of black and white, *i.e.*, grey, mounts. Further, having arrived at the governing principles in this case (*a*) we shall find that they constitute one set of factors in determining the colour or tint question.

The following simple experiments will be found to yield some extremely valuable hints for practical use :—

Experiment 1.—Cut up a piece of moderately

smooth water-colour paper into strips of 1 in. to 1½ in. wide and 4 in. to 6 in. long. Slightly damp each piece with a clean water-moist sponge, so that the colour may flow and "take" evenly. Then, with a moderate-sized brush dipped in good black ink, lay an *even* wash all over strip No. 1 and set aside to dry. For No. 2 take a brush full of ink and dilute this with a brush full of clean water in a small saucer. This should give a tone markedly lighter than No. 1. In the same way strip 3 is to be covered with a mixture containing still more water, and so on to No. 5 strip. The last (viz., 6) should be kept as standard white. Some little care is needed to lay the wash evenly so that lines and spots are avoided, and also to appoint the degree of dilution so that the various pieces form an *evenly graduated series* of steps from the blackest ink to white paper. When the strips are quite dry, cut out of each a piece about ½ to ¾ in. wide and 3 to 4 in. long, and paste them on to a piece of card as shown in fig. 11. Then covering them with a piece of good, *i.e.*, colourless glass, view them at some little distance, *e.g.*, the length of an ordinary room. You will probably observe at once that each strip *seems* to be *slightly graduated* as it approaches the next strip. For instance, if we look at 3 it appears to be slightly graduated darker towards its edge which is next 4, while that part of it which comes

into contact with its darker neighbour, viz., 2, seems somewhat lighter.

Experiment 2.—Take now two strips, say 2 and

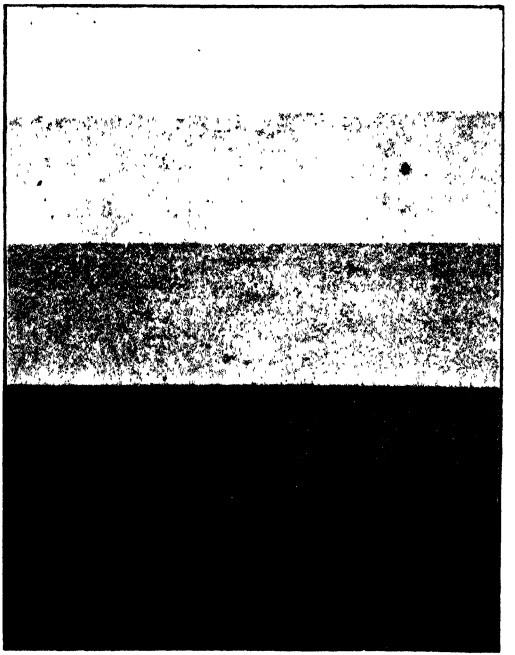


FIG. 11.

4, and place them side by side, making a mental note of their relative lightness and darkness or tone. Now introduce between them a narrow strip of No. 3 tone. Then 2 will seem somewhat darker,

and 4 somewhat lighter than it did when they were in immediate juxtaposition. Again, take two pieces of a light tone, say 4 or 5, and compare them when placed side by side. Then introduce a narrow strip of white between them, noting how they both seem to become somewhat darker. Then introduce a narrow strip of black between them and note how they both seem to become lighter.

Experiment 3.—Take a piece of dark-brown paper about 8 or 9 in. square, convert this into a tube by rolling it round a stout office ruler of about 1 in. in diameter, and gumming the free edge of the paper. Take a seat with your back to the window of an ordinary room, having a plain and fairly white ceiling. Failing this, place a large sheet of white paper or card in such a position that it is evenly illuminated. Having thus arranged matters, look at some evenly lighted part of the ceiling (or white card, etc.), first with each eye separately, and then with both eyes together, so as to satisfy yourself that the vision is normal, and that the space under consideration is fairly uniform in tone. Then keeping both eyes open, place the brown paper tube to one eye, and compare the small patch as seen through the tube with that seen by the other eye. That seen through the tube will appear very considerably lighter than the surrounding part of the ceiling as seen by the other eye.

Experiment 4.—Now prepare a similar tube of not more than two thicknesses of tracing or tissue paper, and repeat the experiment, being careful to be seated with the back to the window, but sufficiently near to the window so that plenty of light can pass through the transparent tube. The opposite effect will now be observed. The patch of ceiling seen through the light tube seems darker than the surrounding parts.

Now combine these efforts by using the dark tube for one eye, and the light one for the other. The contrast is still more marked. That seen through the light tube is the effect of before the "spring cleaning," whilst that seen through the dark tube suggests the results following that tempestuous operation, and stimulating vain regrets that it cannot be performed in this expeditious and simple way.

These simple experiments bring to our notice some of the more important facts connected with contrast ; and a few moments' careful consideration or modification of them may help to show us how largely contrast effects are likely to enter into the formation of our judgments or opinions, without one perhaps suspecting their existence.

We may deduce the following observation for practical application :—

(1) When two slightly different tones (as 3 and 4,

fig. 11) are brought together they mutually affect each other, one seeming darker, the other lighter.

(2) When two tones are compared with an intermediate tone, each of the two first seems to start away from the intermediate one.

(3) When two near tones are compared with one which is markedly lighter (or darker) than either of them, they both appear to become darker (or lighter) than before.

Now, we may try to apply these guiding principles to mounting a print, say an ordinary black and white platinotype or bromide picture. First place the print or a sheet of white card or paper and note how the delicate lighter tones of the prints become markedly darker by contrast with the surrounding white mount ; while the blacks seem blacker than ever, and thus seem to lose any trace of detail which was previously visible. Secondly, place the print on a black or very dark mount, and note how the blacks and deep shadows of the print seem lighter and greyer by comparison with the black surrounding ; whilst the delicate greys and lighter tones of the sky, etc., seem lost in whiteness. Now, try the effect by placing the print on various tones of grey mounts, noting in each case the effect on (i.) the high lights, sky, etc., (ii.) the deep shades, (iii.) the middle tones. [N.B.—With a very little practice it will be found possible, or easy, to make

neutral grey mounts of varying tone by using a good black (not blue-black) ink, and varying proportions of water ; following the hints given in the preparation of diagram No. 11. The points to note are (1) damp the paper, (2) use a large brush with plenty of fluid, (3) slope the table or desk slightly, so that the colour tends to flow evenly down the paper, (4) do not attempt to cover a large sheet of paper with a dark tone at one operation, but in every case begin with a *very* pale (watery) wash, let that dry and apply a second or a third or a fourth, always being careful to lay each wash, not parallel to, but across the previous one, (5) keep the brush always as evenly filled as possible, and make up at the outset enough dilute colour to cover the whole. Any attempt to match a tone, should the quantity run short, is almost sure to meet with failure. An egg-cup or saucer will be found convenient for this purpose. Rough drawing papers may be toned in this way, but for rough surfaces some little experience is needed. Attention should be directed to getting the paper to the proper degree of dampness and employing general pale washes one over the other, because the "hills and valleys" out of very rough papers are apt to dry patchy from irregular wetting.]

Speaking from some little experience gathered from numerous experiments and extended observa-

tion of the practice of our more advanced authorities, the following general (but very elastic) principles seem to be worth remembering by those who have not had the benefit of personal advice or prolonged experience: —

(1) First, observe that all glass degrades, lowers, or makes darker in tone all the parts of the picture as well as the mount.

(2) Quite white and quite black mounts should be seldom employed—*i.e.*, only for exceptional pictures, or with some very special object in view.

(3) Pictures of which the greater part is decidedly light or light*ish* in tone are best supported by a mount which tends towards light rather than dark, *i.e.*, belongs to the upper half of the light scale. For instance, many snow pictures, children in light draperies, cloud and sea pictures are of such a character that when viewed with the eyelids partly closed, they give a *general impression* of light rather than dark. This impression it is no doubt the intention of the worker to convey, and therefore the mount should harmonise with this end.

(4) Similarly, dark pictures, *i.e.*, where the greater part is dark, *e.g.*, studies of heads, darkly clad figures against dark backgrounds, many architectural, street, cottage, and group pictures, etc., etc., wherein the worker desires to convey the feeling of a little light contrasted with a larger

mass of dark. These, of course, generally must be supported (in both senses of the word) by a mount which belongs in tone to the lower (darker) end of the scale.

(5) Pictures which contain a fairly even balance of light and dark, *e.g.*, darkly clad figures in the open, or light figures in dark surroundings, sunlight pictures generally, and others wherein the contrast, though marked, is balanced, admit of great liberty of treatment, according to what is considered the good or bad, weak or strong points of the print. For instance, if we want to direct attention to the sky and to make it look dark, threatening, and overcast, we should use a rather light mount, but at the same time we need bear in mind that this also helps to make all else look darker too. Or again, in a figure or group study where the faces come out rather too dark we may perhaps slightly modify this by the choice of a mount tending to the dark end of the scale.

It may be well here to direct the attention of those whose experience is somewhat limited to the great importance of keeping the sky in true relationship to the rest of the picture. In short, it would be a useful maxim to say, "When selecting a mount for a landscape don't forget the effect it will have on the sky."

It will be obvious, however, that no rigid rules

can be given. Were it so, art would cease to have the charm it has, both for the worker and observer. The only rule of art is the rule of patient study, careful experiment, and liberty of personal choice and feeling for every one. Let, then, every reader of these lines try the experiments for himself, with this one idea clearly set before his mind—that there are one best and many inferior ways of doing everything, and that patience and slowly acquired experience are the best guides he can have in his candid search for the one, viz., *the best*, way.

CHAPTER V.

COLOUR (TINT).

THE most difficult factor in the selection of a mount has purposely been left to the last—viz., its colour. In the present chapter it will be convenient to use that word chiefly, if not entirely, in its everyday sense—viz., red-, blue-, green-ness, etc.

As a matter of actual practice we seldom (thank goodness) see a *bright* red, green, blue, etc., mount employed. Where colour is used it is generally subdued (tertiary), *e.g.*, olive, russet brown, or perhaps more frequently it is a tinted grey, *e.g.*, a blu*ish*, green*ish*, yellow*ish* grey. And it is just because the colour is not as a rule sufficiently pronounced that, while we are conscious there is "something wrong," yet, we do not quite know exactly what it is. Had the offending colour been more marked we should have rejected it at once, though perhaps without being able to give any clear reason for so doing. In order to make our experiments more simple, direct, and practical,

it is proposed to employ only bright colour at first. Also it is suggested that we use such apparatus, colours, etc., as are easily obtainable in any town, so that every reader may, if he please, follow the experiments, make his own deductions, and guide his future practice thereby. Tissue paper of many bright tints can be obtained at any ordinary stationer's. It will be convenient to have a half-sheet of as many of the following colours as are readily obtainable :—

Red purple (plum), blue purple (violet), smalt blue (deep sky), cobalt (bright sky), Prussian blue (greenish-blue), emerald (sea green), yellowish-green (pea-green), greenish-yellow, pale cadmium (sulphur, lemon), deep cadmium (buttercup), orange yellow (marigold), orange-red (chrome), rose pink (madder), ruby red (poppy), crimson.

Obtain a stout ruler or card-tube of about one inch in diameter. Cut a piece of tissue paper of such size that when folded round the ruler you have a tube of about 9 to 12 inches long, and one or two thicknesses of tissue paper. A very slight touch of thin gum or paste is enough to hold the free edge of the tissue paper. Should the colour of the paper be very dark (*e.g.*, deep violet, etc.), one thickness will be sufficient. In the case of the very pale tints (primrose, etc.), two (or three) thicknesses may be required.

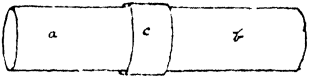
As it is not easy to handle tissue-paper tubes without crushing them, the following simple contrivance will be found to meet the difficulty:—Taking now the same ruler that was used for the tissue paper tubes, roll round it a sheet of *smooth* writing paper, thus adding to its (the ruler's) size about a couple of thicknesses of paper all round, and gum down the free edge. With this now as an enlarged mould form several short tubes of any stout paper. These should be about 1½ in. wide, and of three or four thicknesses of paper. These will be found to easily slip over the tissue paper tubes (as a napkin-ring slides over a folded napkin), and so will form a convenient handle. The accompanying sketch (fig. 12) will make this clear, where *ab* is the tube of tissue paper, *c* the short sliding tube of stout paper.

Experiment 1.—Place a large sheet of white paper, or card, in such a position that it is fairly well lighted, and so that the light from the window falls upon it sideways. The observer sits close to the window and opposite the sheet or card, and so that he also has a strong side-light. He now takes one of the paper tubes (say, a bright blue), and holds it close to one eye (say, the left), and, closing the other eye (the right), looks steadily through the (blue) tube at the white card for about half a minute, being careful to have a good

strong side-light falling on the coloured tube so that it appears a *bright* colour.

After about half a minute or so, the observer will begin to notice that the circle of white card seen through the tube assumes a slight greyness and tending towards yellow. In a few seconds more this effect will increase. He may now open the right eye, and while keeping both eyes open will direct attention first through the tube, then at the white card with the right eye. He will now probably see a bright yellow circle through the tube, the colourlessness of the white card seen by the eye which was recently resting aiding the contrast. Making a note of this kind of yellow so seen, he may now select a tube of a tint as near it as possible. The yellow tube is now used with the right eye, and the blue one, as before, kept for the left eye. The contrast becomes still more marked. After another half-minute he will begin to see a blue circle through the yellow tube at the right eye, as well as a yellow circle through the blue at the left eye. He may now take another blue tube, this time one which has a decided green tendency —a green*ish* blue—and, repeating the same process, will be led to note that the circle seen through

Fig 12

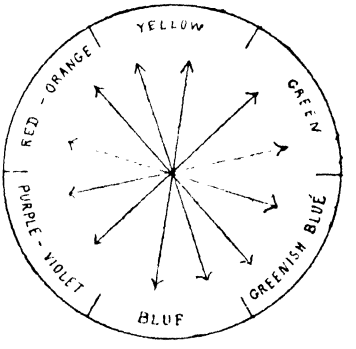


the greenish-blue tube is more reddish and less greenish than before. In fact, the greenish-blue produces an orange "after-image." Another tube —still more green—is taken, and the complementary colour so seen is still more red. By the time the experimenter has passed on to, say, an emerald or apple green, he will have got a red or purple circle. As the green passes on towards yellow—say, something between pea green and primrose—he will have a violet tinge, and so on. These effects are much more vivid and beautiful than many would suppose who have not tried them, and as the results are not only easy to obtain but important to the photographer in many more ways than the selection of mounts, they are strongly commended to the practical test by all readers.

Having arranged the tubes in pairs of colours, such that the circle seen through one corresponds to the colour of the paper of the other, it will be found that they correspond to the subjoined table-diagram, fig. 13, where the pairs of colours are at opposite ends of the diagram of the circle. For instance, the purple corresponds to a green tending towards blue, while the violet, being more blue, will correspond to a green tending towards yellow. Again, an orange tending towards yellow will correspond to a green tending to blue, while an orange

tending towards red will have corresponding to it a somewhat similar green tending towards the yellow-green. The practical upshot of the matter for us at present may be roughly summed up by saying *that any colour surrounding a patch of white (or grey, i.e., mixture of black and white) tends to tinge or seems to tinge the white or grey with its complementary colour or tint.*

Fig 13



Experiment 2.—This may be shown in the following way:—Take a piece of blue tissue paper, about a foot square, and at its centre cut a small rectangular opening about, or rather less than, a quarter-plate, say 3 in. by 2 in. Prepare a similar piece of yellow tissue paper. Place these side by side on a table, so that soft diffused daylight falls upon them. Place a piece of white paper under each. The white paper seen through the opening represents the very light part of a photograph. The blue and yellow tissue papers represent two brightly tinted mounts. Standing now in such a

position that each white patch is opposite one eye, hold a sheet of brown paper, dark cloth, etc., in a line with the nose, so that each eye only sees one opening and its surrounding colour. Endeavour to divide the attention of the two eyes so that each one gazes intently at the picture and mount (!) opposite to it. In a few seconds the picture with the yellow mount will appear tinged with blue, and that with the blue mount tinged with yellow. This represents the case of a black and white print. The white paper represents the highest parts, while all others are white mixed with varying degrees of black.

Experiment 3.—Place below the small openings pieces of very pale pink tissue paper. That surrounded by the yellow mount will receive a blue tinge, giving it a tendency towards purple or violet, while that surrounded by the blue mount will be tinged with yellow, and so give the pink a tendency towards a yellow-red, *i.e.*, orange. This second case represents many processes where the print has a reddish tone, *e.g.*, gelatino-chloride, albumen-silver, and others.

We are now in a position to understand how it is that a black and white platino print on a green-yellow mount often looks a cold blue-grey, and when on a green-blue looks slightly warmer, *i.e.*, reddish or brown. It may be urged, however, that

we have been experimenting with bright colours only, and such as are never used as mounts. A few moments' thought, however, will show us that the colours used are these same bright colours variously mixed together with varying proportions of black and white ; in fact, the mounts used are grey tinged with yellow, blue, green, and so on. That these effects still remain, although in a more subdued and therefore not so easily detected form, may be shown by continuing experiments 2 and 3 still further—viz., by covering all over with a sheet of thin white tissue.

Probably every reader of these pages knows of the *Tit-Bits* Pears' soap optical experiment.

Experiment 4.—In case, however, it has escaped his attention, he may now try the simple experiment of covering with a sheet of white tissue paper the green cover of that weekly publication, and noticing the ink-printed parts appear as though tinged with red. In the same way the cover of the AMATEUR PHOTOGRAPHER may be tried. The colour of the paper being in this case somewhat more blue, the ink-printed parts will show a dark orange-grey. If now he takes a bit of pale pink or red tissue paper, and with a soft pencil makes a cross pattern of, say, ½-inch opening, and lines of a similar width, and covers all over with white tissue, the dark (*i.e.*, pencil) parts in this case will show a green

tendency. In the same way a cross pattern may be made on light bright tissue papers of other tints, and then covering with white tissue, noting the tinge which is given to the pencil marks. These of course show us what to expect will happen to the darker parts of a black and white print when surrounded by a decidedly tinged mount.

The practical upshot of the matter seems to be somewhat thus. That as colour is to a large extent a matter of personal feeling, no rules can be laid now. At the same time, bearing in mind the effects produced by colour contrast (for want of a better word, we might call it complementation), it is well to remember that every coloured object affects the appearance of every other neighbouring coloured object. If we wish for any reason to make a print look yellow we shall, with that end in view, select a colour whose complementary effect will be to yellow*ise* its neighbour—viz., something between a violet and a greenish blue—whereas if we wish to tinge the print with a suspicion of red, we shall surround it with a green tending towards yellow, and so on. Reference to diagram (fig. 13) shows the effect that any colour produces (by its complementary or contrast effect) upon its adjacent objects.

In the difficult matter of a silver albumen print, for instance; if we cut a print in half and mount

one part on a yellowish-green mount, and the other on a greenish-yellow mount, the former will look a reddish-purple, the latter a bluish-purple (*i.e.*, violet). Now obviously several other factors enter into the matter, and in varying degrees and cases influence our choice of tint; for instance, the general colour of the room in which the picture is destined to shine in its own glory. The colour of the frame also plays a part in the question. The sentiment of the subject will or ought to be considered. For example, a sea piece and a portrait. It will hardly be likely that we shall wish to intensify any red present in the former case—a red sea being for the most part not harmonious with such subjects. We might desire to suggest green-blue or even a slight sunny yellow. In the second case (a portrait, say, of a child) we should hardly care to suggest sea-green, while a slight pink or sunny yellow might be entirely acceptable.

CHAPTER VI.

MOUNTING TINTED PAPERS.

PROBABLY many, if not most, of the readers of these notes and hints have come to the following conclusions regarding the choice of mounts usually kept in stock by the dealer:—First, that the "choice" is not particularly choice after all, and that the majority of mounts offered are entirely unsuitable for the best effects; secondly, the colour-tints are as a rule too crude—too pronounced—bilious yellows, raw unbroken greens, chilly blues, and so on. The surface is usually shiny, smooth, repellent. The sizes are such that the necessary cutting down means needless or at least regrettable waste. Thus we are practically reduced to preparing our own mounts.

First, let us deal with plain drawing paper. Its recommendations are that it is obtainable in a considerable number of colour tints, is of various surfaces (very few are offensively smooth or extravagantly rough), it is made in conveniently large sheets, is reasonable in price, and easy to

manipulate. (As to sizes, prices, tints, see below.) Let us assume that a sheet of drawing paper has been chosen, of colours suitable to the desired effect of the print, and that it is proposed to mount this paper on thin card so that it may serve as a simple tinted mount. For this purpose properly prepared starch and a wide, flat hog-haired paste-brush (costing about two or three pence) should be used. If the following simple and perfectly easy operations are carried out the result should be a perfectly flat-tinted mount.

(1) Place the sheet of tinted paper on a table, and place the print upon it. Then with the L-shaped pieces (see Chap. II., *ante*) determine the actual size and proportion of the mount that is to be visible when the picture is framed.

(2) Cut a piece of tinted paper half an inch larger all the way round than the intended visible result. This is to allow for what is hidden under the "rebate" (or recessed part of the frame), which is usually about half an inch deep.

(3) Cut a piece of mounting card half an inch larger all the way round than the tinted paper just mentioned. This extra margin is partly to allow for the expansion of the paper when wet, and partly to simplify the operation of placing the tinted paper on the card, so that there may be a slight marginal excess of card all the way round the paper.

(4) Mark (with pencil) the surface of the card upon which you are intending to place the paper. Have at hand a *perfectly clean* sponge in a soup plate which contains clean cold water to the depth of about half an inch. Cover your mounting table with a piece of quite clean, smooth oilcloth. Should any of the starch or other mountant get upon it, it should be *at once* removed with the sponge. Have at hand a small, clean towel.

(5) With the sponge moderately wet, damp the marked surface of the card and lay aside a minute or two, until the card has a decided curl, due to its expansion from moisture. Then in the same way damp the *other* side of the card. It will now begin to straighten itself again. It is now time to damp the tinted paper—this should be done on the side which is intended to be in contact with the card. While the paper is expanding and getting rid of blister-like appearance, damp for the *second time* that surface of the card which was first wetted, —viz., the marked surface. While this second sponging is penetrating the card, it is time to return to the paper. The wetted surface of the paper will now be very nearly, if not quite dry. Over this surface, with as little delay as possible spread an even but thin layer of starch paste. Take the paper up by one corner, so that it hangs

vertically. Then seize the opposite corner with the other finger and thumb, and curve its opposite corners upwards, so that the starchy surface is *outwards* and *downwards*.

Thus in fig. 14 the opposite corners, A, B, are held by the fingers, so that the starchy surface (dotted) is outwards and downwards. The card —with the marked (twice damped) surface upwards —having previously been placed flat on the table,

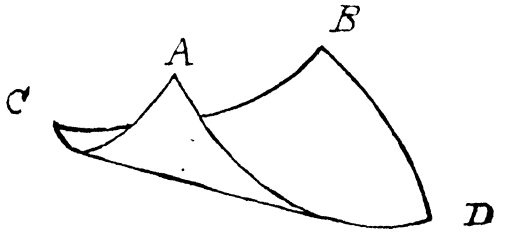


FIG. 14.

the starched paper, in the curved position shown in fig. 14, is slowly brought down on to the card, so that the opposite points, C and D, are equidistant from opposite corners of the card. If this is carefully done, it will be quite easy to bring down the other corners, A and B, into place. Remember that as these corners have been handled, they will require a slight retouching with starch paste. The card supporting the paper is now placed aside, with a book or some other convenient object supporting

its concavity, as in fig. 15. The curvature, as shown in the diagram, is by no means excessive.

(6) The print to be mounted is now quickly damped, or, still better, this may be previously done. It is then starched and applied to its proper place. The position of the corners having already been indicated with the *marking needle*, the whole, consisting of card, paper, and print, are then allowed to dry together in the position indicated in fig. 15. If the proper quantity of water has been

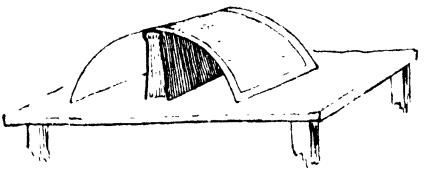


FIG. 15.

used in damping the card and paper, it will be found that when dry the mounted picture is VERY nearly flat.

It will be found upon trial that different kinds of cardboard require various quantities of damping water. Again, a stout paper or print has more "pull" in contracting from drying than a thinner paper, and so on. Trial alone will clear the road to success. The beginner is more likely to use too little than too much water for damping the card. If the mount is to be of a large size, *e.g.*, 24 by 20,

it will be found necessary to so far wet the card the second damping that it curls to nearly a semi-circle - considerably more than that indicated in fig. 15.

Should the foregoing directions (which have been repeatedly followed with satisfactory degrees of success by the writer) be found insufficient, the following may be also tried :—Proceed as already directed, and then watch the gradual drying of the print from the position as in fig. 15, until it contracts, and is nearly straight again. Then place it face downwards on a clean sheet of blotting-paper above and below it, and place a few heavy books to prevent any further curling.

Mounting Cards.

For all ordinary purposes, where the print is to be placed on the mount, *i.e.*, not behind a "cut out" opening—a moderately thin four-sheet card will serve. These are of yellow substance with white paper on each side. They may be obtained from Reeves and Son (4, Farringdon Avenue and Moorgate Street) through any artist's colourman. The two convenient sizes are *royal* (23 by 18) and *imperial* (29 by 21). Prices are about twopence and threepence each respectively. It will usually be found that the larger sizes cut to best advantage.

N.B.—If a board with white middles for cut-out mounts showing a bevel is required, these may be had from Windsor and Newton, six-sheet royal, sixpence ; imperial, ninepence.

Tinted Paper.

Both the above-mentioned firms supply small samples of their various tinted papers. Each worker in this matter must be guided by his own taste and requirements. The following tints (colours) are commended to his notice :—

Reeves.—Harding's imperial 72 lb. (4*d.*) ; Harding's imperial 140 lb., a rougher and stouter paper (8*d.*) ; Whatman's Creswick imperial 110 lb. (9*d.*).

Imperial crayon papers (4*d.* per sheet), tints numbers 1, 2, 4, 5, 7, 8, 10, 14, 15, 17, 18, 19, 20.

French crayon (Ingres) papers, 1½*d.* per sheet royal, numbers 1 bis, 2 bis, 8, 11 bis. French crayon, Reeves, No. 8.

Windsor and Newton (prices practically the same as above).—Imperial hand-made crayon papers, tint buff, French grey ; imperial machine-made crayon paper, Nos. 150, 152, 154, 169, 176, 177, 178, 181, 184, 185, 186, 187, 190, 192, 193 ; tint, C, E, F, and "Stone."

The following royal "Michallet" papers are very suitable for mounting on card for large-sized

work, *i.e.*, whole-plate and upwards. They are similar in price, size, and texture to the "Ingres" papers previously mentioned. Tints 2, 5, 6, 7, 9, 10, 11.

Brown Paper.—There are several tints of commercial brown papers which may sometimes be used with excellent effects. Trial alone will show what tints are desirable.

Mounting Mixtures.

(A.) *Starch Paste.*—Perhaps the mountant most generally used and found convenient is starch jelly. It should be prepared in the following manner:—Take a clean pound jam-pot, and warm it thoroughly by letting hot water stand in it for five minutes. Pour away the hot water, then take a teaspoonful of dry starch (preferably "white," *i.e.*, without blue in it), and with two teaspoonfuls of lukewarm water, rub the mixture to a smooth thick cream. Then from the kettle, containing water that really boils, pour slowly a fine stream of boiling water on the starch cream, and stir thoroughly all the while. As soon as the jam-pot is rather more than half full, you will notice that the opaque chalk-and-water-like mixture somewhat suddenly becomes nearly transparent, *i.e.*, in laundry *parlance* it "clears." As soon as it has thoroughly cleared, about two or three teaspoonfuls of hot water may

be added, and the jam-pot then set aside in a draught to get cool. If the right proportions have been used, the result, when cold, should be a clear, semi-fluid jelly of consistency somewhere between that of treacle and *blanc-mange.*

(B.) *Glue Mountant.*—With some workers this is a favourite, and it certainly is very satisfactory when stout papers or cards have to be fastened together. It may conveniently be prepared by breaking up French glue into small pieces about the size of a marble, and covering the pieces with cold water for some hours until they have swelled very considerably and will not take up any more water. (N.B.—If the glue dissolves it should be rejected as an unsatisfactory sample.) The swollen pieces of glue jelly are now transferred to a wide-mouthed pickle bottle and well shaken together, so that there are no great spaces between them. A few spoonfuls of water are added. The pickle bottle is then placed in a saucepan containing water, put on the oven or on the hob of the fire. The gentle heat soon will cause the glue to melt into a thick syrupy mixture. When all the pieces are thoroughly melted, and the mixture has been well stirred with a glass rod, the bottle is removed from its warm position. The mixture is now allowed to cool until it shows signs of thickening. Methylated spirit is now poured into it in a fine stream, and

well stirred in. It will be noticed that as soon as the spirit falls into the glue it forms a white curd, which quickly dissolves. You may go on adding the spirit, stirring all the time, until it begins to show signs of not dissolving quite so quickly. This mixture, when cold, should be of the consistency of thick (not clotted) cream or thin treacle.

(C.) *Gelatine Mixtures.*—A convenient form of gelatine mountant may be made by soaking about an ounce of gelatine in cold water until it will absorb and swell no more. The superfluous water is poured away, and the gelatine melted by gentle heat, removed to a cool place, and methylated spirit poured in slowly and thoroughly well stirred, until, as in the case of glue, the white curdy precipitate ceases to be dissolved. It will be found that 1 oz. of gelatine treated in this way will require about 4 oz. of spirit. Should it solidify on cooling, it may be sufficiently liquefied for use by standing the containing bottle in a cup of hot water.

Another gelatine mixture may be given—viz., dissolve 4 oz. of Nelson's No. 1 gelatine in 16 oz. of water, add 1 oz. of glycerine ; thoroughly stir in (adding small quantities at a time) 5 oz. of methylated spirit.

Yet another convenient form of paste for papers, but *not* for silver prints may be given, viz.—

Take 1 oz. of arrowroot, thoroughly mix with

5 oz. of water, and boil to a jelly. Take 1 oz. of gelatine and dissolve in 5 oz. of water. Mix the two, and add when cool 5 oz. of methylated spirit and 10 drops of carbolic acid.

A Convenient Paper-Weight

may be made by folding up in stout clean paper (gumming down the edges) a pile of half a dozen or dozen old negatives—should the reader by any chance happen to possess any which can be spared for such purpose. For larger-sized weights, a brick wrapped up in three or four thicknesses of newspaper, and finally in clean brown paper, will be found very convenient.

CHAPTER VII.

"CUT" MOUNTS.

A "CUT" or "cut-out" mount is usually understood to be one in which an opening has been cut. The picture is fastened to and behind the opening, so that it is seen through the "cut-out." Mounts of this kind may be obtained in various forms from the dealers, but in most cases they suffer from one or two defects. Firstly, those faced with tinted paper are generally on a straw-board (yellow) middle. In order to hide this yellow bevel it is a very common custom to cover it with a strip of sham gold, *i.e.*, bronze paper. Secondly, when the tinted paper-faced mount has been cut out of a white middle we are unpleasantly affected by the juxtaposition of a white bevel and a tinted surface. In some few cases we have seen mounts cut out of thick (eight-sheet) card where the surface and bevel are practically of the same tint. The effect for the most part is admirable, provided the mount is not dead white, or so light that it degrades the high lights of the print.

The object of the present chapter is to show how these cut-out bevelled mounts may be made by the amateur ; and further, to point out two ways in which they may be modified. The present writer has only seen one or two examples of the first to be mentioned, while the second is presumably quite new, and it may be further said, decidedly effective in several of the cases actually tried.

First, then, as to cutting a bevelled opening. It will be found of the greatest assistance to employ a suitable knife. The form chiefly used by professed mount-cutters is that shown in fig. 16 and known as a mount-cutter's knife. It consists of three parts—B B the blade (sharpened at one end only), H the wooden handle through which the blade slides, and S the screw.

It will be noted that the handle is oval, thus giving a firmer hold than if it were circular. At one end the wood is strengthened by a brass ferrule or ring.

The thumb-screw, S, passes through this metal ring and, when tightened, holds the blade firmly in any position. Thus, as the blade is worn away by repeated sharpening, its projecting length may be readjusted. In G we show the various surfaces of the point, seen broadside. In E we have its appearance viewed edgewise. Another very useful form of blade is also shown ; in this case both ends

are sharpened. The curved cutting edge, N, is for a long sweeping cut; that at M is invaluable for getting into small corners. One handle may be made to serve for either blade. (These tools may be obtained from Messrs. Melhuish & Sons, 84, Fetter Lane, Holborn. The price of the handle is about 1*s.*, and of either form of blade about 6*d.* each.) For sharpening these and similar tools

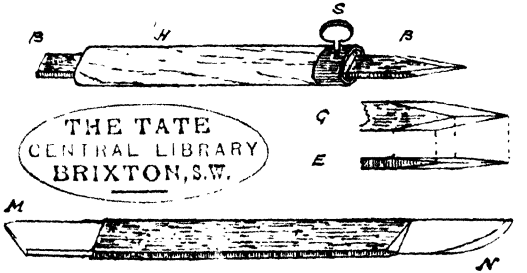


FIG. 16.

nothing is better than a "fast-cutting Canadian oil-stone," price 6*d.* to 1*s.* 6*d.*, according to size and mounting, etc.

It need hardly be said that the knife must be *kept* quite sharp if good, even, straight work is desired. When not in use, keep the point protected by a clean dry cork. This trifling precaution may save a serious accident.

The exact size of the opening must be carefully and distinctly marked with the "marking needle"

or a finely pointed hard pencil. In order to keep accurately to the marked line it will at first be found helpful to use a stout square-edged hard wood or metal guide. The knife must be firmly held, and kept at the same angle to the paper throughout its course. Fig. 17 will help to explain what is here meant, where C B is the cardboard; the bevel is being cut at B by the knife K, which

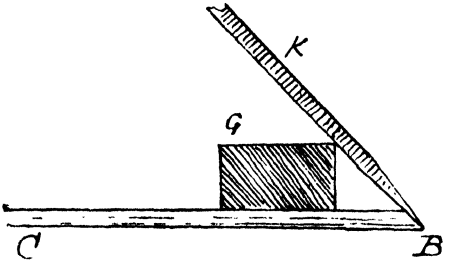


FIG. 17.

slides along G, the guide. The angle C B K should be kept as uniform as possible. At first it will be well to experiment on a few pieces of rather thin card. When cutting thicker cards it will be found of some assistance to cut out roughly the opening to within a quarter or half an inch, so that the final strip to be removed is about that width. Some little trouble will be experienced at first in getting the corners neat and exact. The great points here are "go slow," "keep a good cutting edge" to the

knife, and cut on hard wood or "brown board." If lines of any length beyond a few inches are to be cut, it will be found of great help to fasten the guide firmly down on and to the table, by means of a couple of small cramps, which may be bought at any tool shop for about sixpence apiece. These handy little things will be found of further service later on.

We may now refer to our first-mentioned application of cut-out mounts. First coat a sheet of stout card (yellow straw board) with some dark-tinted paper (certain brown papers are admirable for this purpose) in the manner described in last chapter. Then carefully cut out a neat smooth bevel, and gild the bevel with *gold leaf* (not "gilt" paper or Dutch metal). For pictures which are low in tone, dark, quiet, and sombre, this style of mounting, when accompanied by a quiet dark wood frame, has an admirable effect.

Now for the second method. Cut out a bevelled opening. Cut a piece of suitably tinted paper about half an inch *larger* all the way round than the full size of the card. Place this on your cutting table. Then place the card with opening upon it, so that there is an equal margin of paper visibly projecting all the way round. Then cut away an opening in the paper of the same shape as that on the card, but half or three-quarters of an inch

smaller all the way round, *i.e.*, the length and breadth of the opening in the paper are each one inch or so less than that in the card.

Now sponge with cold water the upper surface of the mount (see last chapter), and allow the card to curl somewhat. Damp the paper. Apply starch paste. While on the table with starchy side up, place the card upon it, so that the openings are centrally coincident ; press down, then reverse and rub down with dry blotting-paper. While the paper is still damp and starchy, cut with sharp knife a fine line from the angle of the paper opening to the angle of the card opening. Fig. 18 represents the present stage where the paper side is downwards, so that we see the back of the card. A B C D is the margin of the card opening. F E, E H are two sides of the paper opening. The dotted line A E has been cut from angle to angle. Similarly at the other three corners. The four loose paper flaps are now folded back, as B N C, C M D, care being taken to see that the starchy surface comes in even and close contact with the bevel of the card. Gentle pressure with an ivory paper knife at the corners makes the damp paper stretch and accommodate itself to the surface of the card. The outer free margins of the paper are also folded over the outer margins of the card (not shown in the diagram). This will tend to prevent

any great curling or shifting on drying. The result should be a cut-out tinted paper mount *with* bevels of exactly the same tint as the surfaces. If this be neatly done the effect is in certain cases admirable.

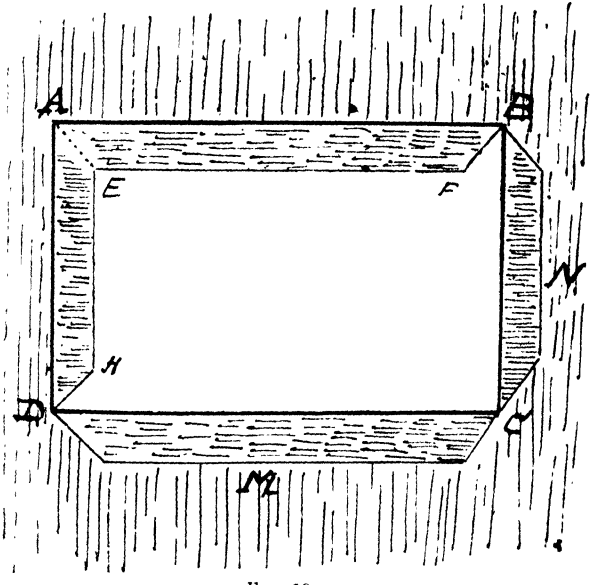


FIG. 18.

It is important to note that photographs mounted behind cut mounts of any kind should not (as sometimes is done) be merely stuck to the edges of the opening. Variations of temperature, etc., produce all sorts of unpleasant blister-like appear-

ances, and frequently twist the mount itself out of true shape. For the best effect the prints should first be mounted on stout card, with at least a clear margin of an inch of card all the way round the print. This card margin is then to be fastened to the back of the cut-out. For this purpose the glue mixture mentioned in the last chapter will be found convenient.

CHAPTER VIII.

PREPARING THE PRINT.

A CERTAIN ancient writer (Mrs. Glasse, to wit) has laid it down that you must first *case*—*i.e.*, skin; or, as others say, *skatch* (Norfolk for skin), or as others have it *scotch* (cut up), or yet others say, *catch*—your hare before you cook it. Whichever reading of this occult passage the reader may prefer, he will probably agree with us in translating it for present purposes thus: If you are going to trim your print at all, you must do it before you mount it. Now, if the reader happens to visit many exhibitions of photographs he cannot fail to have noticed quite a serious proportion of improperly trimmed prints. One has the horizon line of the sea a quarter of an inch higher at one side than the other. Another shows buildings, other than Pisa or Chesterfield, gently toppling over to one side, suggesting earthquakes at play. Curved and ragged edges are not uncommon, etc., etc.

The writer of these notes has in mind the many steady-going workers who do not mind a little care

or trouble, who are not beyond taking a hint, who recognise the fact that in the increasing keenness of competition every detail helps towards, or detracts from, the total result. Therefore it is thought that a few general suggestions on even so simple a matter as trimming prints, may prove acceptable and helpful.

1. The first mistake which nearly every beginner makes is that of attempting to bring all his prints to one uniform size—in other words, to get the largest possible print from every negative. A moment's thought will show this is a wrong idea. Our best workers do not always keep up to their best level. They recognise the truth of the (adapted) problem, "spare the print and spoil the picture." Observation shows us that the best workers use the trimming-knife most freely. "Quality, not quantity" is their motto. A print from a 12 by 10 negative is often cut down to a 6 by 5 picture, and so on. Many a large print is a small picture lost, *i.e.*, because its undesirable part has not been removed. A large

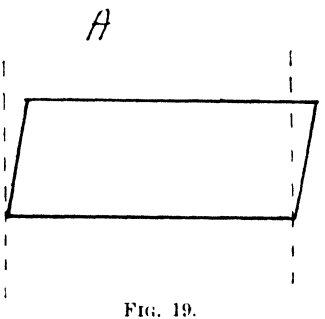


FIG. 19.

rough diamond often yields only a (comparatively) small brilliant, but what is left is well worth having. No rules can here be given as to how much or how little should in each case be removed. But as soon as the approximate *tint* and *tone* (see Chaps. IV. and V.) of the mount has been decided on, we may conveniently cut a couple of rather broad (3 or 4 inches) L-shaped strips (see fig. 1, p. 15) of the paper proposed to be used as mount. Then by covering up parts of the print we may see how much or little is to be removed. It is difficult to convey much in this direction without actual examples before us; but it is hoped that at some not very remote period, something may be said upon this matter—with illustrations. Two somewhat general observations will soon force themselves upon the attention of the observant student, viz., (1) that it is not well to have the horizon-line very near midway up the picture, and (2) it is not, as a rule, satisfactory to leave any lines or strips of light or shade running near to and parallel with any of the margins.

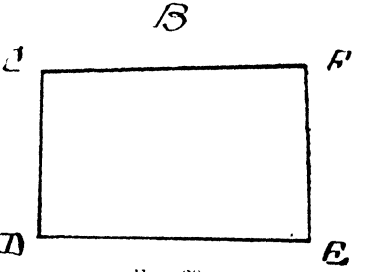


FIG. 20.

2. Having settled how much to cut away, the next point to attend to is cutting it with a clean, *i.e.*, not ragged edge. This defect may be due to several causes: (1) not having a sharp enough knife, (2) cutting on a soft substance, (3) the print not being thoroughly dry. First, as to the knife: the present writer has used, among others, all the forms shown in fig. 21. The long narrow form *a* is *not* recommended, as being liable to break from the strong pressure sometimes employed. The second shape, *b*, is a favourite and very useful shape. It will be observed that it is double-edged, the half towards the point only, being kept sharp. The shapes *a* and *b* are such as are in common use and known as office knives. The knife represented at *c* is drawn on much smaller scale. This is a boot-maker's or cobbler's knife. Its advantages are that it may be bought at any ironmonger's, is cheap in price (from 6d. to 1s.), has a large stout handle, 4 to 5 inches long, and somewhat thicker than an ordinary office ruler. It is easily sharpened, and will stand a good deal of pressure without breaking. The end (*p*) only, should be sharpened, the remaining part of the edge should be rendered safely blunt, by rubbing edgewise on a stone. By curving the cutting part (see diagram), it keeps sharp all the longer. A fourth form (*d*), consisting of a thin revolving disc of metal, with its circum-

ference "knife-edged," set in a metal handle, is a favourite with some workers. In our hands it has not proved generally satisfactory. This much, however, can be said in its favour, viz., that it answers very well for thin and highly surfaced, *i.e.*, albumenised and similar paper; also, *if care is used*, a *wet* bromide or platinotype print may be cut with it. For general purposes the forms *b* or *c* are to be preferred. Experience will soon show that the edge should be fairly sharp, but not too sharp. If set with razor edge

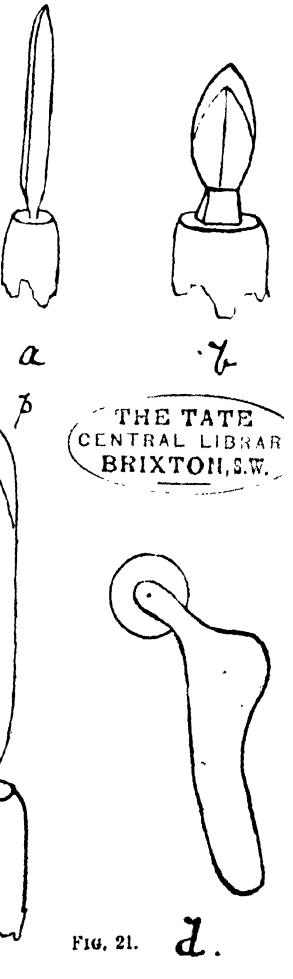


FIG. 21.

it becomes blunt after cutting two or three prints. Next as to the surface upon which to cut. If comfort is to be considered, nothing is so nice as a sheet of stout brown board, not yellow or straw board. Unfortunately, this does not last long, as every knife cut leaves a slight edge. With many workers a sheet of stout glass is used. There are two objections to this, viz., the print is apt to slip about, and so is the knife, so that the operator may cut a slice off the end of his finger if not very careful. And, secondly, the glass soon blunts the edge of the knife. A third substance, viz., a sheet of moderately stout zinc, may be used. Its advantages are that the print is not so apt to slip about, and it does not blunt the knife edge so quickly as glass. Its disadvantages are that it is difficult to get it quite flat.

As to the third point, viz., having the print quite dry, one experiment with a damp print will convince the reader that he cannot cut it with a clean edge by dragging the knife in the ordinary way, but that he has to press the knife through the paper. Hence, for this reason we can (with care) cut a damp print with the revolving circle (*d*), because it does not drag, but rolls along.

3. Next we must use some care to cut the print with straight edges. This is a point to which it is needed to draw careful attention. The majority of

amateurs use as cutting guides the thick glass "cutting shapes" sold for that purpose. Speaking from the experience based on the seven or eight in our possession, ranging in size from 12 by 10 to C.D.V., we may say "without prejudice," that not one of them is true in having all its sides straight and its corners right angles. The smoothness, *i.e.*, the dangerous slipperiness of their edges, is also against these glass cutting shapes.

Whatever be chosen for use as the cutting guide, be it glass, metal, ivory, wood, etc., it will be as well to test the straightness of its edge. This may be easily done as follows:—Place the guide on a sheet of smooth cardboard, and with a *very* fine pencil-point trace a fine line along its edge, holding the pencil at the same angle to the paper edge all the time. Now turn the guide over (but do not reverse the ends), and draw another fine line so that its two ends are about $\frac{1}{16}$th or $\frac{1}{20}$th of an inch from the first line. Any curvature or irregularity will in this way be quickly seen. This brings us to our next point, viz.—

4. The corners should *all* be right angles. Not only should the opposite sides be parallel and equal, *i.e.*, the outline be a parallelogram, but it should be also a rectangle. A glance at figs. 19, 20 will make this matter clear.

In the fig. A the opposite sides are equal and

parallel. The dotted lines show the deviation from a right angle at the corners.

Now, although this diagram seems a gross exaggeration, yet when reproduced on a large scale, say 8 by 6 or 12 by 10 print, such similar distortion to the extent of $\frac{1}{4}$ or $\frac{3}{8}$ in. at the corners may now and then be seen. It should here be noted that this form is sometimes due to trimming the prints before toning, and then drying them between blotting-paper with uneven pressure, so that shrinkage does not proceed evenly. The second form of faulty trimming, viz., fig. 20, B, is the more usual error. Here we have the angles at D and F true, *i.e.*, right angles, but those at C and E are faulty, one being greater, the other less than a right angle. In nearly every case this result is due to using carelessly a glass cutting shape larger than the desired print, *i.e.*, the two sides C F and F E are cut, the print is turned round, and the cutting shape moved for the other sides C D, D E, without due care that the *opposite sides* C F, D E, and C D, F E are *parallel*. A practical hint is that when a print is correctly cut we may always observe two points: (1) Its opposite sides are equal: this may easily be tested by curving or bending (not creasing) the print, so as to bring the *opposite* margins together, and measuring one by the other; (2) The diagonals are equal, *i.e.*, distance from opposite

corners, F D, equal to C E. If *both* pairs of opposite sides are equal, it is a parallelogram, and if its diagonals are equal, it is also rectangular: but neither of these conditions is sufficient without the other. We may here conveniently draw attention to a simple way of testing a glass cutting shape to see if its angles are true. Place any ruler which has been tested, and known to be true, on a sheet of smooth card. Place one side (call it *s*) of the cutting shape against it. With a fine pencil-point draw a fine line along one of the sides (call it *a*) at right angles to the known straight edge. Now turn over the cutting shape, keeping the same edge (*s*) as before against the ruler, and bring the side (*a*) in such position that it is about $\frac{1}{16}$th of an inch away from the first pencil line, and draw a second fine line. If these lines are parallel throughout their entire course, the angle is a true right angle. If not, the shape had better be rejected as misleading.

The following simple method (which takes longer to describe) may be commended to the consideration of those workers who have to deal with moderately large prints—12 by 10 and upwards—and who desire to be accurate. Having adjusted the trying slips or L-shaped pieces to a satisfactory proportion, make a dot with a pencil or *marking needle* (see page 82) about $\frac{1}{16}$th of an inch outside where the

margin of the finished print is desired, about the middle of each side. Now place the print on a drawing-board (with *square* corners), and fix it in position with a couple of glass letter-weights or a small (discarded) cutting shape. Look the print carefully over to note its vertical or horizontal lines, sea, horizon, buildings, etc. Select the longest or most important and distinct of these natural guides, and, with your T-square against the edge of the drawing-board, move the print, so that this natural vertical or horizontal line agrees with the edge of the T-square. Something moderately heavy is now put on the glass weight to prevent the print shifting. The T-square is now brought up to the four dots in the centre of the sides, and fine clear pencil (or needle) lines drawn. (To make all sure, the diagonals may be measured.) The print is removed to the zinc sheet—a straight edge (preferably metal) is now placed so that its edge is $\frac{1}{16}$th of an inch from the pencil line, and a clean cut made in one steady stroke. It may be noted that the closer lines are together, the easier it is to judge whether they are parallel. This is the reason why the pencil line is drawn not more than $\frac{1}{16}$th of an inch outside the final margin of the print.

The *marking needle* is a very useful tool, which any one may make for himself in a few moments. Select a medium-sized darning or worsted needle,

with a point not too fine or sharp. With a pair of pliers cut or break off the head part, so as to leave about $1\frac{1}{4}$ in. Take now the wooden part of an ordinary penholder, hold the needle (with a pair of pliers) in a gas or candle flame until the thick (broken) part is red-hot, and then push it steadily into the wooden holder, leaving about half an inch of the point part projecting; with a bit of broken glass (or sand paper) convert the round holder into one with four or five flat sides. This will prevent the apparatus rolling off the table. By holding this marking needle at an angle of about 30 to 45 degrees, a fine line may be made made on paper or card, which is invisible unless very carefully looked for.

If the point is too sharp it is apt to tear or scratch rather than mark the paper. We shall have other and further use for this very simple but efficient tool.

CHAPTER IX.

PRACTICAL DIRECTIONS FOR MOUNTING SILVER PRINTS, ETC.

Centring Prints.

This may be a convenient time to refer to a simple method of procedure when several prints of about the same sizes are to be placed on mounts, which in turn are again of nearly uniform dimensions. For instance, a series of holiday reminiscences in a scrap album. Take a sheet of stout paper or thin card just a trifle *less*—say one-eighth inch—than the size of the page or mount. At its centre remove a piece of same proportions as and slightly *larger* (say a quarter of an inch each way) than the largest print to be mounted. When this guide is laid centrally upon the page and kept in position by the home-made paper weights it is then quite easy to place the print evenly within the cut-out opening. Any slight difference is at once seen when compared with the adjacent lines of the opening. For instance, the

difference between a quarter- and half-inch is much more quickly and surely detected than between the distances to the edge of the page, perhaps five and a half and six inches. This is a thoroughly practical and eminently simple device, which has been used by the writer for a considerable time. Where we have to deal with variously shaped and sized prints on different sized mounts, the print may be held temporarily in position by the home-made paper weights (see previous chapter), and the distance of its margins measured with a tape measure and their position assigned and indicated by the marking needle.

It is here assumed that the prints have been trimmed, mounts selected, starch paste prepared (page 61), and that the place of each print has been assigned on its own mount. If the following simple directions are followed out, fifty prints may be mounted with ease and comfort within an hour. The experience of some years has evolved the following arrangement of the table :—

(1) The prints (trimmed, toned, etc.) are taken one by one from the washing water, and by a little gentle shaking freed as far as possible from the adhering water.

One by one they are placed *face downwards*, one on the top of the other in a pile, on a sheet of stout glass or vulcanite. As soon as you have half a

dozen prints so placed, *gently* press out with the palm of the hand as much water as you can, then apply a dry towel and gently press out still more water, and let it be soaked up by the towel. Repeat this about every fifth or sixth print until all are arranged on the glass plate in one pile. Where the prints are of various sizes it is important that the larger ones are the lower ones in the heap, otherwise they are apt to become marked by the pressing process just mentioned. Now arrange your table—opposite a window or in a good top light—as in fig. 22, where G is the sheet of stout glass (or vulcanite), upon which rests, A, the pile of prints, the larger ones, below, the smallest at the top. M represents the mount (or a pile of mounts) upon which the first print is to be placed. P is a jam-pot containing starch paste or other mountant; B, the brush for applying this to the back of the print. This should be of the kind known as flat hog-hair, and should be *not less* than 1¼ in. wide. K is a small pocket fruit-knife with silver blade. This is used to separate the top print when it has been starched from those underneath it. The thin blunt silver blade enables one to do this without tearing the most delicate paper. S is a soup-plate containing clean water to the depth of a quarter to half an inch—it also contains a clean (non-soapy) sponge. T is a clean towel;

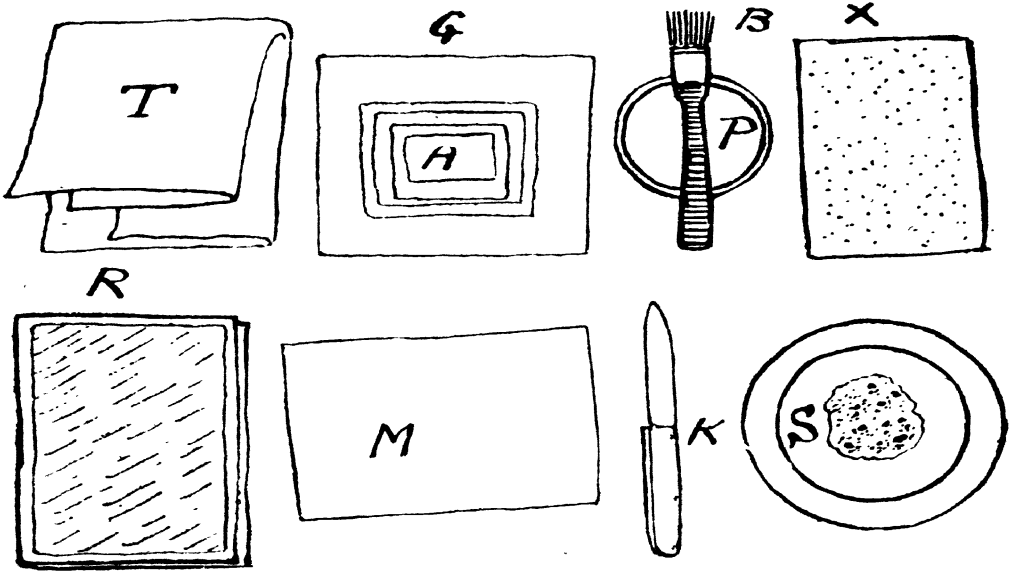


FIG. 22.

R is a pile of three or four sheets of clean blotting-paper.

(N.B.—On no account must blotting-paper be used which contains any ink marks, no matter how slight or dry these marks may appear. The damp print has a peculiar fascination for such marks, and many a print has been ruined by such causes.)

Now, as soon as R, the clean blotting-paper, gets the least damp, it is very easily rubbed either into a hole or into loose fluff. In order to meet this inconvenience, take a piece of smooth tough paper (not blotting), and keep it on the top of the pile R, so that the hand may pass easily and smoothly over it when rubbing down the print. At X is shown one or two more sheets of dry blotting-paper. (N.B.—The blotting-papers R and X must *not* be mixed.)

We now proceed to mount the prints. First the towel is *gently* pressed over G and A, so that all the surface water is removed. The clean sponge, S, slightly damp, is passed all over the surface of the mount M. While this dampness is sinking into the mount and causing it to curl, we take *one* sheet of the blotting-paper, X, and with it by gentle pressure dry the back of the topmost print, A, on G.

Starch paste is now applied with the brush, B, to the back of the top print, care being taken to see that no parts are missed, and that no lumps of

starch are left on it. It is as well to go over the back of the print, first lengthways, then "narrow-ways," and finally a light touch all round the edges. Then by gently passing the knife, K, under one edge (towards a corner) the print is separated from those underneath. And be very careful, in taking up the print, to avoid touching its starched *edges* or *corners*. With a little care this may easily be done by only using the tips of the fingers.

The print is now placed in position on the mount. The clean blotting-paper, R (with sheet of smooth paper on top), is placed on the print. When "rubbing down," be careful that you do not shift the print from its proper position. To ensure this, lay one hand (say the left) quite flat on the smooth sheet, so that you hold the left-hand half of the print firmly down. Then with the outward edge of the right hand smooth the print down by gentle strokes from left to right. Similarly with the other half, always being careful to rub the print from the centre outwards, *i.e.*, towards its edges and never from the edges towards the centre. Should there be any air blisters between the print and mount, they must be gently pressed out towards the nearest edge, with the blotting-paper of course. Should any superfluous starch paste be squeezed out on to the surface of the mount, it must be at once removed with the sponge. The

print is now mounted, and may be set aside to dry. We now turn to print number two. In starching the back of the first print we are practically sure to have put some superfluous starch on the back of the underlying prints. Now, as soon as the first print is removed we find the part of the underlying print, which is covered, still wet. This must in the same way as before be dried by the blotting-paper, X, and in doing this we shall be sure to contaminate this piece of blotting-paper with some of the starch belonging to the preceding print.

You will now see the importance of keeping quite distinct the two lots of blotting-paper, R and X. The latter is for drying the back of the wet prints, and is sure to become more or less starchy. As long as this comes in contact with the *back* of the prints no harm ensues. The former, R, is kept entirely for rubbing down the face of the print, and any starch on *this* side of the print is dirt, *i.e.*, matter in the wrong place. It is for lack of these very simple precautions that we are so often offended by messy patches on the prints and mounts. The two lots of blotting-papers may be used again and again, if they are only kept apart for their separate use. As soon as the sheets begin to feel damp fresh pieces should be taken. Those that are damp may be dried by the fire or in the sun. Remember that the drier, freer from water,

you get the back of the print the better will the starch (or other mountant) stick and hold fast; and the drier you get the print, back and front, the less will it (probably) "cockle" and twist the mount in its drying, *i.e.*, contracting.

To Prevent (Counteract) Cockling.

When we remember that cockling, or curling, is due to the uneven contraction of the print and mount in drying, we at once see that the only way we can prevent it is by removing, as far as we can, the causes. Thus several elements come under consideration. The print should be as free from water, *i.e.*, as dry, as we can conveniently get it. The mountant should likewise contain as little water as convenience permits. The mounts may be expanded by damping, so that they may contract together with the prints. Lastly, when all these considerations have been attended to as far as practically possible, still there often remains a certain amount of curl. We may reduce this somewhat by *preventing* the mount bending as the print dries and contracts. Where prints are mounted in books, it is as well to mount a print on each side of each card-leaf, and so to arrange matters that prints of the same size and proportions are back to back, *i.e.*, on opposite sides of the same card, so that their contracting pull may each

counteract the other. This done, at least two sheets of *dry* blotting-paper should be put between the leaves of the book, and the whole put under a heavy weight or in a press. The blotting-papers should be quickly changed (within the hour), so that the prints may be dried as quickly as possible. There should be at least three changes of blotting-paper, and the book kept under pressure for at least a couple of days.

In the case of prints mounted singly on separate cards, the above procedure may be followed, including a slight damping of the card. When the print has been placed on the card, rubbed down, and set aside for a few minutes until it has curled to its utmost limit and is beginning to contract, then it may be placed in such position that the card is held firmly in its curved position. This may very conveniently be done by calling to our aid a row of books on a shelf. In fig. 23 we represent a mounted print held in position by two volumes which are drawn slightly forward so as to catch the ends of the mount. The print is permitted to dry for twenty-four hours in such a position. When it is removed next day, and laid face downward on the table, it will very slowly straighten out by the continued drying of the albumen surface, and at the end of a couple of days or so will be found practically flat.

It will be found a good plan always to keep your prints (singly mounted in this way) face to face. This will keep out the dust, and if kept under slight pressure, as in a portfolio, they will remain flat for years.

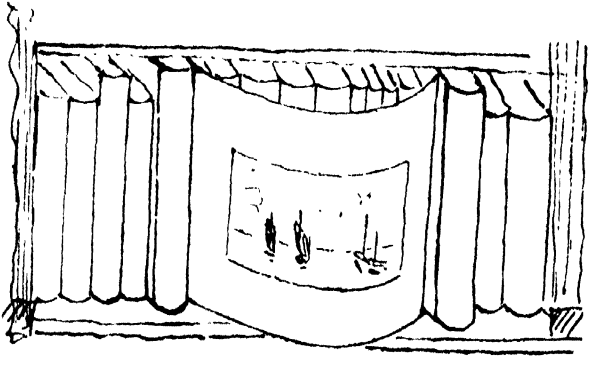


FIG. 23.

CHAPTER X.

FRAMES.

We have now come to the time when it may be convenient to remind the reader of what was said at the outset, viz., that the function of the *mount* is (1) to isolate the picture from its surroundings, (2) to bring out or emphasise its good points and minimise its bad or objectionable features. The *glass* is placed before the picture to protect it from dust and other injurious agents; the frame combines in part all these functions—viz., protection from injury, etc., and also partly assisting in isolating the picture from its surroundings, as well as harmonising with the general effect. Briefly, then, we have to remember that the office of the frame is twofold, *useful* and *ornamental*. Our object therefore is to arrange matters so that we may both have these qualities present, and that neither shall interfere with the other.

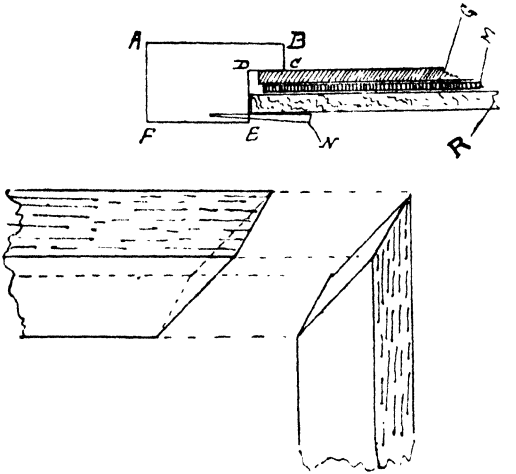
Next comes the consideration of *material* and *construction*, as regards the function of use. For our first experiments we shall be content to employ

wood, with or without a "moulding" surface. We shall also limit ourselves for the present to the flat mitre joint.

As regards *size*, *colour*, and *proportion*, what has already been said on the subject of mounts under these headings, may, *mutatis mutandis*, be generally applied to the frame; always keeping in mind the golden rule that as the coat is made to fit the man, so the mount and frame are chosen to suit the picture, and not *vice versa*; so that mount and frame should be (but not always are) subordinate to the picture.

It is here assumed that the reader has had very little, if any, previous experience in frame-making, therefore mention will be made of many small matters which to the more experienced may seem almost too trifling to mention. First, then, let it be quite clear that we are understanding each other when we speak of the various parts of a frame. Fig. 24 represents the section of frame complete. A B C D E F is the frame or moulding; G the glass; M the mount and picture; R the backing board; N the nail which holds the contents of frame in position. A B is the front or *face* of the moulding; E F the *back*; A F the *outside*, and C D E the recess, or rebate, or more generally, *rabbet*. If the corner of any ordinary frame is examined it will at once be seen that the line of junction of

the two pieces forms half a right-angle with the margins of the frame. This kind of joint is known as a mitre-joint. The first important item for the frame-maker is the *accurate* formation of this mitre-joint. Fig. 25 shows the two pieces forming



FIGS. 24 AND 25.

a corner slightly separated. The corresponding points and corners are connected by the long and short dotted lines.

A glance at fig. 26 will show the general principle of cutting a mitre-joint, where M M is a straight piece of frame material, or "moulding." A triangular piece, T, has been removed in such a way

that the surface, A F B, makes exactly *half* a right angle with the back of the moulding, E A. Similarly, C H G. Thus it will be seen that when these surfaces, A F B, C H D, are brought together, face to face, the outside edges, E A and C G, will form a right angle at the corner of the frame. It is most important that these simple matters should

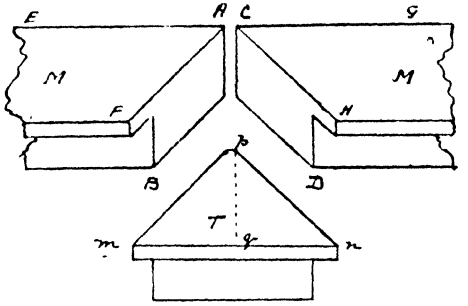


FIG. 26.

be made perfectly clear from the outset, so that we may know exactly what we want to arrive at and so avoid various very common blunders. For instance, we now see that we must remove *four* triangular pieces like T (one for each corner). Now, a moment's consideration will show that *m n* is twice the width, *p q*, of the moulding. Hence the length required to make a frame is equal to the length all the way round the visible part (sight

size), plus eight times the width of the moulding. For instance, if the picture were 15 by 12, and moulding 3 in. wide, the length required would be twice 15, twice 12, and eight times 3 in., or a total of 6 ft. 6 in. It is well to make a further allowance of at least half an inch at each corner, *i.e.*, quarter inch for each surface for sawing and planing, or an extra 2 in. *for working loss.*

A moment's thought will show that the harder the wood and the wider it is the greater will be the difficulty of getting it quite flat and true at each joint surface. The beginner is therefore strongly urged to confine his attention to a narrow and moderately soft wood until reasonable proficiency is attained.

Again, any error of angle increases the difficulty, as the size of the frame increases. As this is a vastly important matter, special attention is drawn to it by means of fig. 27, where we represent one corner of a frame. The continuous thick lines show the two pieces, each correctly cut to half a right angle, and so together forming a true or right-angled corner. If, however, either piece, say the shorter one, A, had been left with the slight excess, *m* C *n* (*i.e.*, the strip shown between the dotted and continuous lines at the junction), this would push the longer side, B (although *it* had been cut truly), into the position shown by the broken line.

For these reasons and the further considerations of not wasting much material in first efforts, we advise beginners only to attempt narrow and small frames. By the word "*narrow*" we mean mouldings about *one* inch wide, and by "*small frames*" we imply that the longer side does not exceed one foot in length. As most ordinary mouldings are sold in 9-ft lengths, one length will make a couple

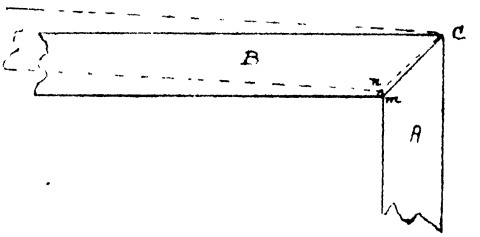


FIG. 27.

of such small-sized frames, if a little care is used in cutting it up at first.

In the next chapter we propose to select our tools and materials, and show how they should be used, so that meanwhile the beginner will do well to thoroughly digest the diagrams accompanying this chapter, so that he may not make the mistake of cutting the mitres the wrong way round—a beginner's mistake almost as common as exposing the same plate on two different subjects.

CHAPTER XI.

FRAME-MAKING TOOLS.

To reset an old saw, we may say that we must first get our materials and tools before we can use them.

First, then, as to materials. I shall at this stage presume that we shall buy some cheap moulding for first experiments, and would recommend what is known as "one-inch black reed." Fig. 28 shows this as seen in section. The dark part represents the black composition of plaster, black pigment, and other substances applied to a basis of wood. Early experience will very soon teach the worker that this black composition is very brittle and requires some care and deftness if ugly fractures and scratches are to be avoided. Mouldings of this character are generally made in 9-ft. lengths. (The white mouldings for gilding and solid woods are usually in 12-ft. lengths.) The retail price of mouldings of this character varies very much. (I can recommend from personal experience Mr. A. Woodgate, Holywell Street, Strand, as the most

reasonable retail dealer I know. His price per 9-ft. length for 1-in. reed (black or white) is 7*d.*, and for the same thing 1½ in. wide is about 9*d.*

Next we must have certain tools to work the moulding into the required form, viz.:

(1) A BACK SAW, *i.e.*, a saw with steel cutting blade. The back or top or non-cutting edge is strengthened and prevented from twisting by an overlap of brass or iron. The shape of the saw is similar to the "meat" or "kitchen" saw found in every household, and therefore needs no diagram. The size selected will be in proportion to the ultimate aims of our experiments. A 12-in. blade will be found generally convenient.

FIG. 28.

The brass-backed tools are usually of better quality, and therefore more costly, than those with iron backs. But for all ordinary purposes the latter when bought at a respectable shop may be made to serve all reasonable requirements. (For all edged tools I can also commend from personal experience Melhuish, 85, Fetter Lane, Holborn. His prices for 12-in. (warranted) are from 3*s.* to 5*s.* 6*d.* for iron backs, and for brass backs 4*s.* 9*d.* to 6*s.* 6*d.*

(2) A MITRE CUTTING BLOCK (shown in fig. 29).—The use of this instrument is to hold the saw, or rather to act as a guide to the saw, so that the

moulding may be cut at a given right-angle. The moulding to be cut is placed along the line *m n*, so that the *outside* (see last chapter) is against the upper part of the block *p q n m*. If the saw moves in the groove shown by the thick line at A, the moulding will be cut at right angles to the direction of its length, but if in either of the other grooves, B or C, the cut will be at half a right angle. It may here be noted by way of caution that when

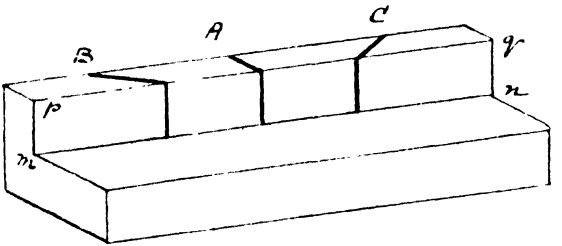


FIG. 29.

cutting mouldings with a saw the tool should be held rather lightly yet firmly until the cut is clean through the moulding part, which, of course, is always uppermost and the first to be cut through. To prevent chipping, use light, short strokes of the saw. A small size mitre block is sold at the Civil Service Stores, Bedford Street, Strand, for about one shilling.

(3) A SHOOTING OR SHUTING BOARD.—This apparatus is of two ordinary forms: the "single

hand" and "double hand." Fig. 30 shows the single form. Shuting the mitre means planing the saw-cut surfaces until they are the exact angle required. This is done by laying the cut moulding with its back against the small stop piece, *m n*. The plane is then worked with its side downwards on *c d*, and the cutting iron moves along *a b*; the moulding is held so that fine shavings are taken off by the plane as it passes the moulding end held against *m n*. As each shaving is cut away,

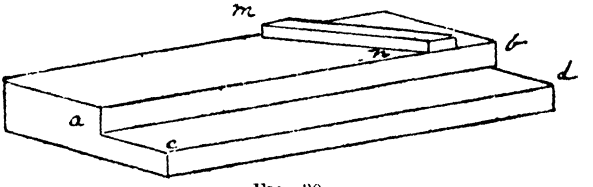


FIG. 30.

the left hand holding the moulding is slightly moved, so as to bring the surface up and cut away another shaving, and so on. Do not attempt to take off thick shavings on any account. The result is an uneven surface and a great risk of spoiling the edge of the cutting iron of the plane. A moment's consideration will show that this form of board is only applicable to one set of ends when the moulding is held face upwards with its outside against the stop. If, however, it happen to be a moulding having its face parallel to its back, as in the case

of many simple forms, such as the ordinary reed similar patterns, then its other set of ends may be worked by turning the moulding so that its face is downwards. As most "slips" (*i.e.*, narrow flat pieces of gilt, etc., wood, often used inside a moulding) are parallel face and back, this form of shuting board is conveniently adapted for working them. In their case two or three ends may be brought up together one over the other and planed together. This form of board may be purchased at the Civil Service Stores, Bedford Street, Strand, for a trifle under two shillings.

For all-round general purposes the second or double-handed form of shuting board is required. This is shown in fig. 31, the difference being that here we have a stop piece bevelled on both sides, so that one end is held with the left hand, with its outside against A C, and face upwards, while the right hand works the plane along *m n*. To work the other end the moulding is now held by the right hand, with its outside against B D, and face upwards, while the plane is turned over on to its other side, and worked with the left hand. To most people, working the plane with the left hand is a little troublesome at first, but if we confine attention to small mouldings, and avoid large or hard woods, sufficient facility in the matter is soon acquired. The usual price of this form of

shuting board is from about 3*s.* 6*d.* for smaller sizes.

(4) HAMMER.—The reader probably has already a selection of hammers, and will employ the tool he has been accustomed to use for similar light work. However, if he does not possess anything at all suitable I should advise him to select one of the form shown in fig. 32. The head is rather long, narrow, and light, one end drum-shaped, the other

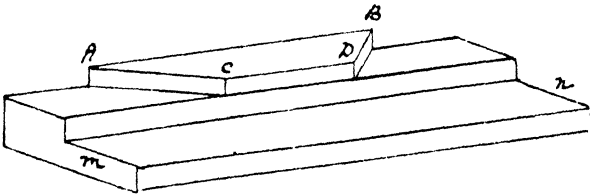


FIG. 31.

wedge-shaped. The handle is long and light. Hammers of this kind may be bought at prices from one to two shillings.

(5) The NAILS most suitable for this purpose are known as "cold cut," or "carpenters'" brads. Their form is shown in fig. 33. They are sold sometimes at 3*d.* to 9*d.* per packet of 1,000, or, more conveniently (as at the Stores), about 2*d.* per pound. (N.B.—It is not to be assumed from the diagram that the nails are nearly half as long as the handle of the hammer.)

(6) BRADAWLS suitable to the size of the nails to be used.—Every one who has used ordinary bradawls knows from sorrowful experience how the temper is tried by the blade of the awl sticking fast in the wood pierced, and parting company from its own proper companion, the handle. A modern form of this tool is fitted with a brass cap in such a way that this untoward incident cannot

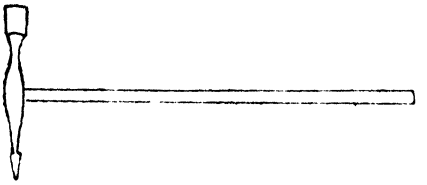


FIG. 32.

FIG. 33.

happen. They are known as "brass-capped" bradawls, and only cost twopence-halfpenny each at Melhuish's or any other respectable tool shop. They are well worth six times the extra halfpenny.

(7) SHUTING PLANE.—If the reader happens to possess a *good* "jack" or "trying" plane, he will be tempted to make that serve his purpose. This may be done provided the two sides of the body of the plane are at right angles to its face; so that when the plane is on either side on the shooting

board its cutting surface may be vertical. If, however, he is about to buy a plane, I can confidently recommend to his notice a plane called a mitre or block plane. It is slightly shorter than an ordinary "jack," has a single cutting iron, no "toat" or handle, and is sold for 2*s.* 6*d.* and 3*s.* This is a well-known tool, and may be bought at Melhuish's (Fetter Lane), Kent's (Euston Road), or Moseley (Oxford Street, also Holborn).

It is, however, important to have a *good* plane of some such kind, and a *true* shuting board. Everything depends upon these two instruments being in good order.

Many of the above-mentioned tools may often be met with second-hand and in good condition at a little more than half ordinary new price. But the buying of second-hand tools requires some little previous knowledge of the matter, as "wasters," *i.e.*, defective tools, often find their way to such shops, and are dear at any price. The advantage of dealing for new goods at a thoroughly well-known and reliable firm is that should a new tool prove unsound (*e.g.*, the metal to snap through a flaw, or the wood to warp from insufficient seasoning), the defective tool is exchanged for a good one as a matter of course.

On buying a new plane it is advisable to give it a good rubbing all over the wood with a very

little boiled linseed oil every other day for a week or so, until this puts on quite a fine surface polish, and tends to prevent any warping, as well as helps to keep it clean and in good working order.

(8) A SHARPENING STONE OR OIL STONE.—The best form is that mounted on a block of wood, and with a wooden cover to keep off dirt and dust. A kind of oil stone known as "Fast-cutting Canadian" is very good for plane irons. Reference has already been made to this useful appliance when speaking of mount-cutting knives. The same stone may be used for both purposes, of course. The cost is from 1*s.* to 2*s.*, according to size. The 1*s.* 6*d.* size is very convenient.

CHAPTER XII.

JOINING THE FRAME.

THE various tools (saw, mitre block, shuting board and plane, hammer, bradawl, nails) described in last chapter are all that are actually needed for frame-making. The frame, however, is not complete until it is put together. This *apparently* simple matter is perhaps one of the chief difficulties with the amateur, and therefore demands some attention in detail.

First, then, let us note the usual method of the professional frame-maker who "knocks them up" at a speed that tempts the inexperienced onlooker to think it is the simplest thing in the world, until a few actual trials convince him that there is considerable "knack" and dexterity required. The four pieces having been cut and "trued up" on the shuting board, they are finally tested for length by comparing pairs of opposite sides. This may most conveniently be done by measuring the inner margins of a pair of opposite sides one against the other. Fig. 34 will help to explain what is

here meant. This point is one of the utmost importance, seeing that a four-sided right-angled figure *must* have its opposite sides equal. Hence this apparently trifling matter of testing the pairs of opposite sides should never be omitted before commencing to "join up."

Next lay the four pieces in their intended position face upwards on a perfectly flat table (drawing board, etc.), and examine the four mitres to see if the angles are true. You should here call to mind a second bit of schoolboy Euclid, observing that

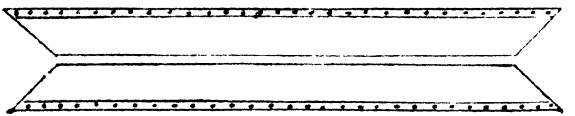


FIG. 34.

when a four-sided figure has its opposite sides equal it is a parallelogram. Thus in fig. 35 A B C D and A B E F are both parallelograms, *but*—and this is the practical point—*when the parallelogram is rectangular* (*i.e.*, has right-angled corners) *its diagonals* (*i.e.*, lines from opposite corners, A and C, also B and D) *are equal*. In the diagram 35 the dotted lines show a parallelogram with opposite sides equal, but its diagonals, F B, A E, are obviously unequal. The diagram, for the sake of clearness, of course, presents a very exaggerated case of what happens too often with beginners.

Having paired the opposite sides, and placed the four pieces in correct position, measure as accurately as possible (with a tape measure marked to eighths of an inch) the distances from each pair of opposite corners. If these are not equal the frame cannot be put together in a satisfactory manner.

We may now proceed to explain how the pro-

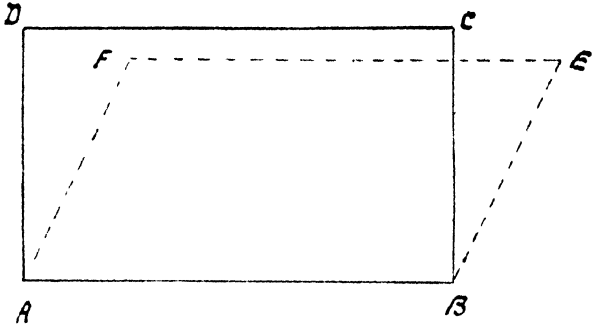


FIG. 35.

fessional worker puts the frame together. He usually employs an iron vice, the jaws of which project some six or more inches above the bench. To the inside of the jaws a strip of card is attached, so that the grip of the vice may not injure the frame. An attempt is made to explain matters by means of fig. 36. The two pieces of moulding are shown as M A, M B; with the mitre at M. One of these pieces, M A, is gripped by the vice, the

jaws of which are shown at V V. The second piece, M B, is seized at H H¹ by the left hand, palm

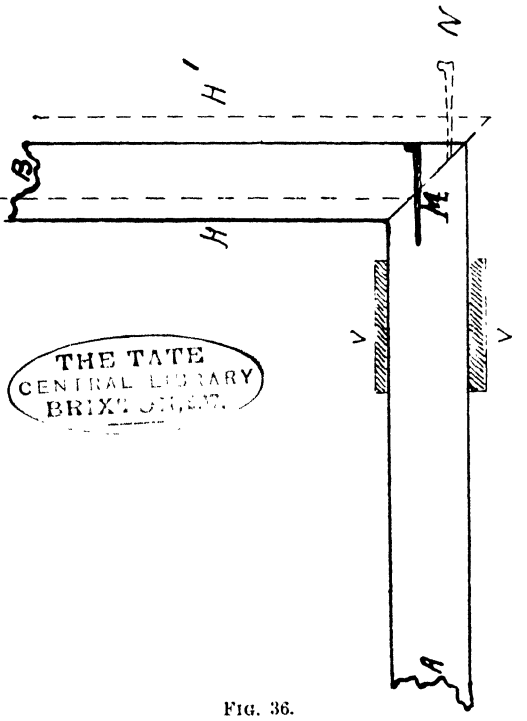


FIG. 36.

upwards, so that the fingers over-wrap the outside of the moulding at H¹, and the thumb is over or along the inner-side H. The wrist, or forearm, of

the left hand rests lightly on the moulding about V V. The moulding M B is held in the position shown by the *dotted* lines. The hammer—held in the right hand—gently drives home the nail N, and at the same time the moulding M B gradually moves from the position of the dotted lines to its true position.

Now this method looks quite easy (on paper), but it requires some little practice (1) in holding the piece steadily in its true position; (2) in judging how much or how far allowance has to be made so that it may slide into its final and correct position.

One great disadvantage is, that should it be shifted too far inwards there is no remedy except a fresh start. On the other hand, should it not have come home quite far enough there is considerable risk of injuring either a moulding or a solid wood by continually hammering at the mitre corner. Furthermore, should the frame-maker not happen to possess an iron vice, he may not be tempted to invest in so costly an accessory.

Fortunately, however, for small mouldings, at any rate, there are other means at hand—viz., various forms of mitre cramps, as they are called—*i.e.*, contrivances to hold the two pieces in position until they can be joined together. That form known as the "Eureka" is, in the writer's opinion, by far the most satisfactory.

The essential features of this very useful little tool are suggested in sketch 37, where A B C is a

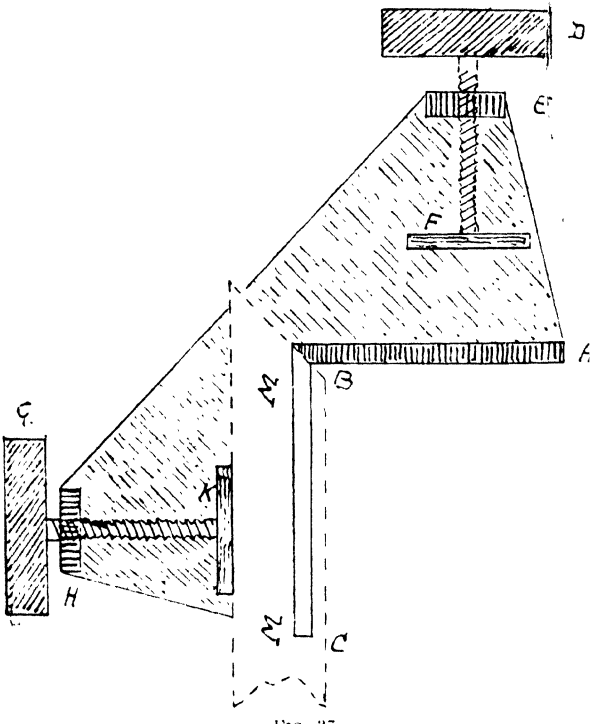


FIG. 37.

ridge consisting of two pieces, A B, B C, at right angles. Against this the rabbeted portion of the frame rests. M M is one piece of mitred moulding,

with its groove or rabbet resting against B C. It is held in position by K, a sliding piece. H is a small fixed block through which a screw works. G is the head of the screw. Thus, by turning G, the screw passes through H, and presses K firmly against M, the moulding. It is at once obvious that the value of this tool entirely depends upon A B C being a true right angle. It is therefore important to see that this is the case. The price of this (the Eureka) cramp, which may be obtained through any respectable tool shop, is about two shillings for the small size. This will hold any moulding up to about 1½ in. wide. In using this tool it will be found convenient to bore the nail holes with the bradawl through the one side only *before* the two pieces are joined together. All being ready, and the sides having first been tried to see that the mitres are perfect, a *slight touch* of glue is given to each surface; they are then quickly brought together, with a slight rubbing motion (any glue which has been pressed out is at once removed with a rag dipped in hot water). They are now brought into position in the cramp, each screw is tightened, a little at a time, until both sides are well gripped. The brads are inserted in the holes already made, and driven up. There is no need, except in very hard woods, to bore the hole in the further piece.

If the first half of the nail is inserted, that is enough hold to enable it to make its own way into the second part, and when it does so it holds all the better for having had to force its own way among the wood fibres. To the beginner let me say that it is important to put the nail in with its head pointing *along and not across* the moulding. If it is put in with the head across the grain of the wood, there is considerable risk of its acting as a wedge and splitting the wood. If the nail is bent slightly by a faulty blow of the hammer, it should be at once straightened by means of a pair of pincers or pliers, but if at all seriously bent, it must be drawn out and a new one inserted in its place. A bent nail is apt either to break off short or to curl its point to some very undesirable place, and sometimes show through and spoil the surface of the moulding, or get in the way in the rabbet.

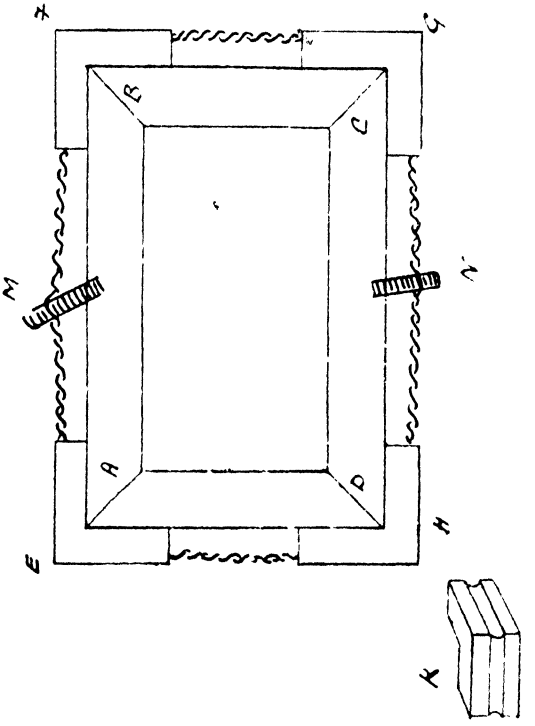
When the amateur frame-maker passes on to larger, *i.e.*, wider mouldings, he will find his difficulties increase in two directions, viz., in shutting the mitres so as to get them true, and also in putting the frames together. To assist in meeting the former difficulty he may find a mitre-square useful, but this tool will only serve as a rough guide. Where his attention must be concentrated is in getting the angle of his shuting board true. He

will probably find that a very thin card against the inner or outer end of the face A C, fig. 31, page 105, will be enough to correct the angle.

When we come to joining up wide mouldings, it will be needful to have some contrivance to hold together the four pieces until the glue is quite "hard set." One such well-known contrivance is shown in fig. 38, where A B C D represent the four pieces of the frame accurately worked. To hold them together we may employ four pieces of wood, E F G H each cut in the form of a right angle. One such piece is sketched in perspective at K. Along the middle of these angle pieces is cut a semi-circular groove (shown in K). A piece of very stout non-elastic string, or thin cord, is wound *twice* round these four grooves and tied as tightly as possible. Window-blind cord that has been *well stretched* will be found suitable for this purpose. Two thin flat pieces of wood, M N, are then inserted between the two thicknesses of cord. These are then twisted round several times, so as to tighten the cord and draw together the mitres. When this is done as far as the strength of the string will allow, each piece, M N, is drawn forward just enough to catch the edge of the frame, and so prevent the string unwinding (see fig. 38).

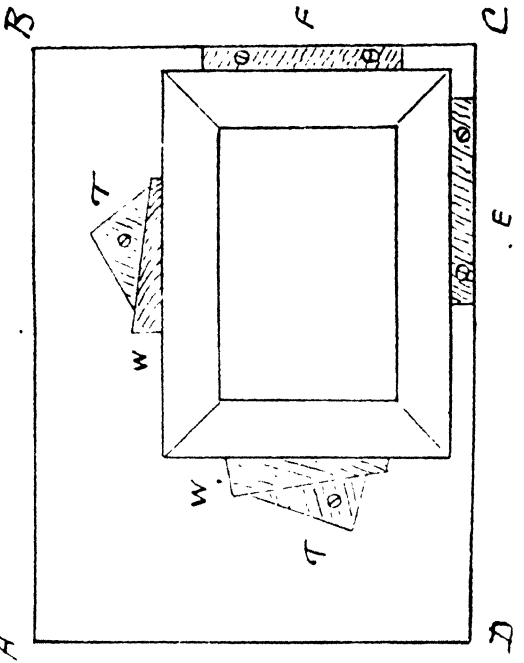
There are perhaps two slight disadvantages in this contrivance, which sometimes in part detract

from the advantages of its general simplicity and efficiency, viz., (1) that it covers up the corners, so



preventing one getting at them to insert nails or screws ; (2) it is sometimes rather apt to give the frame a twist out of one plane, to "skelly," as it is sometimes called.

To these two objections the writer has (through necessity) evolved the following contrivance, which so far as he knows, is original ; but no doubt it has



been "invented" scores of times before by others in similar circumstances.

The arrangement is suggested in sketch fig. 39, where A B C D is a good-sized drawing (or other flat) board. A work-table top will serve the pur-

pose, though not so conveniently as a portable drawing-board. Two narrow and quite straight pieces of wood, E F, are screwed near one corner in such a position that their inner edges are *exactly* at right angles. This point is of prime importance and too much care cannot be expended upon this matter.

Next provide a couple of wedge-shaped pieces; the size is not of great importance, say seven or eight inches long, and tapering from about three inches at the wide end to about one inch at their narrow end. They should not be too thin ($1\frac{1}{2}$ in. will be found convenient). You will, of course, be careful to cut these wedges so that the grain of the wood runs more or less the long way of the pieces. Otherwise the hammer will probably split the wedge on first trial.

These wedges are shown in the diagram as W W.

We now only need provide a couple of triangular pieces, say *roughly*, 4, 5, and 6 inch sides. These must be of the same *thickness* as the wedges. About the middle of each triangular piece, T T, carefully drill a hole to take a *stout* screw, and countersink the hole for the head of the screw. The screw hole should be such a size that the piece of wood just turns when the screw is held in the fingers.

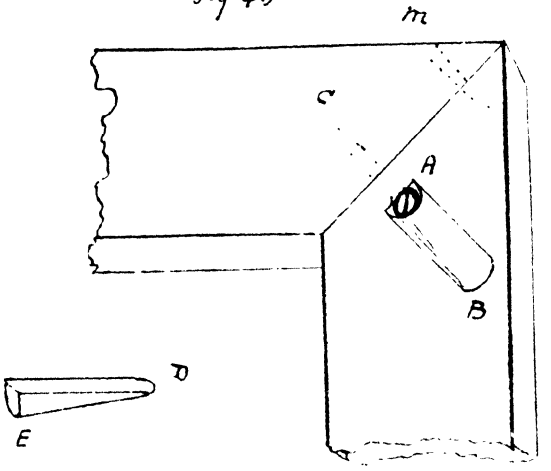
To use the apparatus, first fit together as shown

in the diagram the four pieces of the frame. Then screw the triangular pieces down on to the board in such positions that there is convenient space for the wedges. The screws should be short and stout, so that while the triangular piece turns easily about the screw as an axis, yet it does not rise up from the board. When all is at hand (glue-pot, wedges, *light* hammer), a frame can be put together with this contrivance before the glue gets the least bit tacky. It will be seen that by this means we keep the pieces flat, *i.e.*, in one plane, *and* we can get at the corners so as to insert a screw or nail. For large frames long fine screws are to be preferred.

Here we may refer to another valuable but simple method of screwing wide frames. In fig. 40 we may imagine we see the back of a wide and moderately thick frame, say four inches wide and one inch thick. We should use a 2-in. screw for the corner position, as shown by the dotted lines at *m n*, and here the screw would get a fair hold of both pieces. But to insert a screw to follow the line B A C we should need one of at least six inches in length, and even then the greater part would be used in the first piece. To meet this we may with a suitable sized *gouge* scoop out a groove B A, beginning at the surface at B, and deepening towards the mitre at A. The side sketch at D E

will suggest the nature of the hole worked out by the gouge. A two-inch screw inserted at A shown by the dotted line A to C now has more "hold" than a much longer one started from the side near B. Obviously the slant of this groove must be

Fig 40



adjusted with some care, or the screw point will disturb the surface of the frame, if it does not actually show quite through.

The reader can scarcely have failed to notice frames where, through shrinkage or other causes, the mitre has opened at the inner corner. This is almost sure to happen if unseasoned or wood liable to

shrink is used. But it may be prevented to a great extent by the following simple procedure:—After having adjusted your frame, lay it aside in a warm, dry place for a week or two before putting it together. On a second examination you will probably find that it requires a very slight readjustment. This may now be made, and the frame put together with glue, the outer corner screws being inserted at once, and the inner ones (in recessed grooves as fig. 40) as soon as the glue is dry, say second and third day after gluing. At the end of a week or so these inner screws will probably admit of another half-turn tightening. After this no shrinkage is likely to show unless the wood used is entirely unfit for the work.

It is as well always to put in the two screws in opposite directions, *e.g.*, as in fig. 40, the head of the outer screw is at M, that of the inner one at A.

Joining Slips, Flats, Inner Frames, etc.—In many cases the slips of inner gilt frames are not really joined at all. They are merely cut tight to fit. To do this is easy enough. First make your frame, then put in the glass, so that the frame rests on the work-table face downwards. Then cut off your pieces for slips by measuring the length against the rabbet at the back. In planing up the corners you must constantly try for a fit, gradually working them down all round and in opposite pairs

—*i.e.*, a shaving off one end of each pair of opposite sides. In time an exact fit will thus be obtained. The slip should be inside the glass, as not only does it help to hold the four corners true, but also to keep the "gilt" (dutch metal) from blackening by exposure to the air, etc. Slips and inner frames wider than $\frac{3}{4}$ in. should be glued together. For this purpose the contrivance shown in fig. 39 will be found a great convenience.

The reader may imagine that this apparatus (fig. 39) involves spoiling a drawing-board by making additional holes for the triangular pieces for every fresh-sized frame. As a matter of experience, however, some three or four positions for each piece will be found sufficient, as larger wedges may be used, or they may be used two or more together. Again, by having the triangular pieces a fairly good size, and of so placing the screw hole that it is *not* at the same distance from any two of the three sides, we get a further choice of distances.

Do not attempt to *nail* a frame together when the glue is unset (unless you are using a Eureka or other equally good cramp). The holes for the screws should be bored with a twist bit or gimlet. Special long-bodied gimlets for boring the holes in cramped positions, such as for the screw A C in fig. 40, may be had at any good tool shop.

How to make Glue.

Glue.—Mention has just been made of glue. It may be as well to give a hint on glue, (1) *buying*, (2) *making*, and (3) *using*.

(1) The best kind is known as Best Scotch, and sold in sheets of about a pound ; they are about 8 in. by 4 in. by $\frac{3}{4}$ in. long, wide, and thick respectively ; of a dark, nearly transparent colour. When wetted and rubbed it should be slightly sticky, if good ; but if it is at all greasy the sample is not satisfactory. Best Scotch costs from sevenpence to eightpence per pound. The other kinds are known as French, London, Russian ; but they are not so well suited as Scotch for the work in hand.

(2) *To make glue*, either of the two following methods may be employed. (A) Break up glue into small pieces about the size of a marble, by wrapping it in two or three thicknesses of stout paper, and use a heavy hammer, and a stone or brick as an anvil. Put these small pieces in the inner glue pot of, say, $1\frac{1}{2}$ in., cover with cold water, say, to 2 in. in depth. Fill the outer vessel about three-quarters full of cold water. Set the inner part in the outer, and warm *slowly* on the hob at first, and then on slow, red fire till just boiling point. Clear away the scum before using. Good glue should run off the brush in a

clear, fine, transparent string without breaking into drops, until the brush is empty.

(B) Another, and perhaps better, method is to soak the broken pieces with plenty of *cold* water, in a dish overnight. They will swell considerably, but should not melt if the glue is good and the water cold. Then when the glue has swelled as much as possible by absorbing water the swelled pieces are transferred to the inner glue pot with just enough water to cover them, and then slowly melted over a slow fire, or, better still, a small gas ring stove. It is to be remembered that every time glue is re-melted it deteriorates, so that for amateurs using it in small quantity it is as well not to make more than is likely to be used up, say, after four or five meltings.

(3) *In using glue* the chief points to observe are that the surfaces should fit well, *i.e.*, be both flat or equally curved. The glue should be *hot* and *clear*, *i.e.*, free from scum, stray hairs from the brush, sawdust, etc. As little as possible should be used. The less glue the better the joint. Hence the reason why the "old hands" rub the two parts well together, so as to press out all superfluous glue while liquid. The joint should be allowed to set thoroughly before any further work is done on it. For all ordinary woods which "take" glue fairly well the setting

should be complete in twenty-four hours. But if the glue is not a good kind, the wood rather damp, or of a kind that does not take, *i.e.*, absorb glue readily, the setting may take two or three days. One may generally get a very good idea as to how things are going on inside the joint by examining with the point of a penknife some of the surplus glue which has been pressed out and set at the edge of the joint.

Glue brushes (small size twopence) are generally rather too long in the hairs, and are improved by having the end cut a trifle shorter and somewhat chisel-shaped.

Never use the glue brush for stirring the glue, as it soon either loosens the hairs or puts them out of shape. For this purpose use a bit of hard wood—*e.g.*, straight-grained oak—about 8 in. long, $\frac{3}{4}$ in. wide, and $\frac{1}{4}$ in. thick, with its point slightly cut away like a chisel, so that it may be used to keep the superfluous glue from the sides of the pot.

Glue pots, from 8d. upwards, according to size. The outer (water) pot should be emptied and inverted to drain as soon as done with; otherwise it will soon rust, and may crack or leak.

Somewhat detailed attention is drawn to the matter of glue, as much of our success in further experiments of putting together more complicated frames will depend on the glue being good.

CHAPTER XIII.

GLASS, BACKBOARD, RINGS.

Glass.

The recent attempt to introduce the fashion of framing photographs without mount or glass has not hitherto met with any serious support. However much theory would suggest the omission of the glass, actual experience is in general favour of it as a means of protection against dirt and injury. That glass has the effect of lowering the tones of the picture may easily be seen by the simple experiment of laying a print on a table near a well-lighted window and covering half the print with a piece of clean glass. Even if the glass be practically colourless (which is by no means often the case), it will be seen that the highest light (*i.e.*, white paper) under it is not quite so light (*i.e.*, white) as those which are uncovered. When the glass has a decided tinge of colour (generally green-yellow) its effect is more marked, and this is even still more the

case if the print be other than black and white. For instance, a greenish glass on a pinkish print yields a reddish-grey result. Obviously then it is important to use glass as free from colour as possible. Therefore thin glass is usually to be preferred. As a matter of fact most of the glass which is used by many of the plate-makers is of a very fair quality, and tolerably free from decided colour. It is not impossible that the reader may happen to possess one or two (possibly more) negatives which are not up to gold medal standard, and that he would be willing to "sacrifice" them for the comparatively base purpose in mind. But how to get this glass clean may be a difficulty. Every practical reader knows well enough that the film is ready enough to part company with the glass when such a result is not greatly needed; but when the consummation is devoutly wished, the film sticks with the tenacity of a thousand limpets. Our fathers have told us there is a use for everything, and here comes in the use of a spent platinotype acid fixing or clearing bath. Slip your negative—face upwards, of course—into this acid bath, avoiding air bubbles, and rock gently to get the film thoroughly wet all over, and leave it for say ten minutes. Then take it out and with the finger just loosen the film all the way round the glass. Now commence at

one corner, and aiming at the opposite corner roll the film over and over with the finger tips. A couple of minutes' practice will enable you to remove the entire film in one piece. Now transfer your glass to a dish of hot water and rub well back and front with a soapy flannel. Rinse well in warm water, and dry the plate by rubbing it briskly with a glass cloth made thoroughly warm. Finally a polish with the new cheap substitute for wash-leather, viz., "Selvyt," sold by all drapers. Note this, that glass once very thoroughly cleaned will keep clean much longer than when only imperfectly cleaned. Next observe that most glass is not quite flat, *i.e.*, it has a slightly concave surface. In small pieces it is not always easy (nor is it in such cases of any importance) to discover the concave or hollow side. The simplest way, perhaps, is to rest it on another piece — when on pressing down one side the other will rise slightly if the concave side is uppermost. It is always as well, and in large frames important, that the concave side should be inwards, *i.e.*, next the picture: otherwise should the curvature be comparatively considerable, and any pressure used in packing up the picture with backing, etc., there is great risk of the glass breaking. Also, it is important that the glass should *not* tightly fit the rabbet, especially in the

case of new frames ; because some shrinkage of the wood is very likely to take place, resulting in breaking either the glass, or, more likely, in opening the mitre-joints. This also, of course, applies to the backing boards, and in some measure to a stiff card mount. In the latter case, however, the result is sometimes seen in bulging or " cockling " of the mount or print. The glass may in small frames be a sixteenth, and in larger frames an eighth of an inch clear all the way round, *i.e.*, an eighth or a quarter less each way than the rabbet. Where a frame is at all likely to be exposed to dusty atmosphere (exhibitions, towns, etc.), it is a wise precaution to paste the glass into the frame so as to prevent dust creeping in and producing the dirt cones too often seen. This may easily be done in several ways. Three of them are shown in diagram 41, where the dotted line represents a piece of *thin* brown paper attached to both frame and glass by paste or very thin glue. In A the strip of paper is first fastened to the front of the rabbet, then folded over upon itself, and the glass rests then on two folds of paper. This perhaps is the best, though not quite the easiest to manipulate. In B, half the width is attached to the front of the rabbet as in A. The glass is then inserted, the margin of the back of the mount pasted, and the other half of the paper

folded over upon it. In C, the glass rests on the wood of the rabbet, and the paper is first

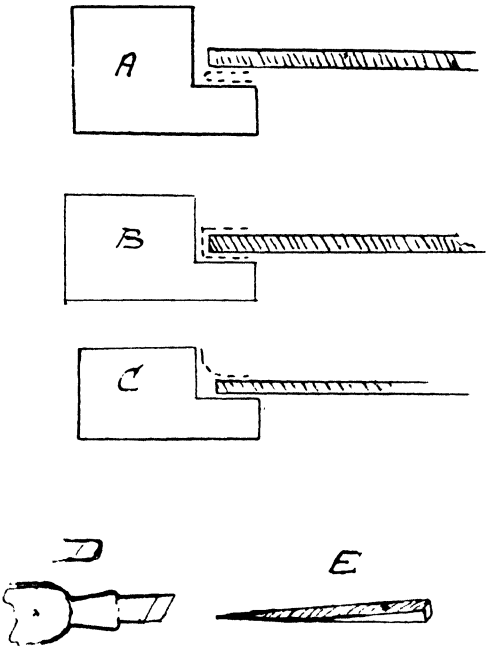


FIG. 41.

fastened to the glass and then to the back part of the rabbet groove. Note in A and C the paste is entirely on one side of the paper, but in B one-half the width of the paper is pasted to the

frame, while the other half on its other side is pasted to the back of the mount.

Backing Boards

are usually cut in two thicknesses, 12s or 16s, the latter, of course, being the thinner. The price is 2*s.* 6*d.* per half plank of either thickness. The thicker are generally to be preferred. Thus for half-a-crown you may get twelve pieces (each is known as a "leaf") 6 ft. long, about 11 in. wide. This is much the cheapest way to buy this useful material; and as it comes in very handy for several other purposes besides backing frames, two neighbouring friends may very well take a half plank between them. It is advisable to set up these leaves to dry thoroughly by standing them separately "on end" against a dry wall in an airy place. For cutting them up (here again the wisdom of our forefathers comes in) there is nothing better than a broken office or pocket knife (the former being preferable by reason of the blade being a fixture). This blade-stump should be ground down to a chisel edge in the manner shown in fig. 41, D. For a guiding edge the blade of a metal square is very convenient. Having marked the required length, lay the leaf on the bench and, with the square as guide, make a cut about half way through the thickness of the wood. With a fine bradawl

pierce a small hole to show on the other side the position of the cut. Turn the leaf over, and again using the square, make another cut at the place indicated by the awl-hole. The piece will now, with a slight bending touch, come apart with clean edges. Having due regard to economy, it is as well to use the backing board shortways across the frame, because the lengths being shorter there is less likelihood of their twisting or warping. Before nailing up the backing be careful to give it a good rub over with a stiff brush to remove any clinging fragments or sawdust. It is very annoying to find after nailing up that two or three bits of wood fibre or sawdust have worked their way on to the face of the picture. When the board is finally fixed it is only completing our previous precaution against dust creeping in at the front to paste slips of paper all round the back and over the joints of the backing.

NAILS.

It is a matter of some considerable comfort to get the right thing for nailing up. Although they are well known in the trade, yet they are not always to be met with at the ironmongers'. If the reader will compare fig. 41 E with fig. 33, he will notice that while both are sold as "*brads*" there is this very important difference, viz., in fig. 33 we

have a nail with a head and no sharp point—in fact, its end is often slightly curved, and such a nail is only fitted for use where a hole has been previously bored for it. It is this nail that the ordinary (*communis vel hortensis*) ironmonger will persist in trying to sell for the purpose in hand, although it is most inconvenient for that use. The right kind, known by various names, *e.g.*, military brads, backing brads, etc., differs in the respect that what it lacks in head it makes up for in its point, which is quite sharp and tapered. This friend in need, shown in fig. 41, E, is there nearly twice its natural size, in order that its good points, or rather point, may be seen. Brads of this kind cost only a few pence (about 4*d.*) per lb. When nailing up the backing board, use a light "tack hammer," and always have some weighty object to hold against the outside of the frame; otherwise you will find the blows of the hammer are opening the mitre joints. For this purpose the edge of a large heavy hammer, or, better still, a kitchen flat-iron, will be found effective and convenient.

Rings.

Of all kinds of picture rings, the old-fashioned iron screw with brass head and loose brass ring is to be avoided. The so-called steel, but in reality soft bright iron "screw eyes" are convenient for

quite small sizes. This form may be now had in brass, but when screwed into hard wood, *e.g.*, oak, they are apt to break away at the neck. By far the best are Nettlefold's patent-pointed screw rings. These consist of a well-pointed screw eye, through the small head of which passes a split-ring. These may be had electro-plated, which prevents rusting. The No. 3 size is very convenient for frames up to, say, 20 by 16, if not unreasonably heavy. They are considerably cheaper per box of one gross, *i.e.*, about 2*s*.

We might very properly pass on to consider the several matters of *gilding*, *staining*, *carving*, in wood, *arrangement* and *hanging* of pictures in private rooms and for exhibition purposes, but these and several other matters immediately connected with mounts and frames must stand over for consideration at some other time.

CHAPTER XIV.

COLOURING AND STAINING FRAMES.

The amateur frame-maker will, at any rate just at first, be wise to practise frame-making with the ready-made moulding in lengths of 9 or 12 feet; and also will be less likely to be discouraged by failure if he confines his attention to narrow mouldings (say about an inch or an inch and a half wide) and to frames of modest dimensions, *i.e.*, not exceeding a foot in length or breadth. It is to be hoped that there will, however, quickly come a time when he is dissatisfied with the limitations of the patterns and colours of the more easily obtainable samples, and will on the one hand desire to design his own mouldings, and also to colour them according to what his own taste suggests as appropriate for the particular picture to be framed. The present chapter is designed to give a few hints as to the colouring of wood frames by suitable dyes or stains, etc. But first a word as to the frame. If the reader is not disposed to get out his own mouldings on the bench, it may interest him to know that un-

coloured wood-mouldings in a variety of patterns and in lengths of about 12 feet, can be bought from various frame-making shops—*e.g.*, The City Frame Company, in Coleman Street, London, E.C.

These mouldings are in oak, walnut, American "white wood," etc. For our present purpose, "white wood" is by far the easiest to deal with, and admits of the greatest range of colour treatment. In applying a staining material we have two courses open to us—viz., to stain the wood before or after it is cut up to make the frame. And, when one considers that this process means wetting, drying, and possibly causing shrinkage or twisting, it will be clear that it is better to do this before, rather than after, the frame is made up. It is, however, by no means imperative to stain the wood before the frame is put together; but it is certainly very desirable to see that the mitres are well *joined, glued, and screwed*, if the frame is to be stained after being made. The staining of white wood is usually a very simple matter indeed, if one or two points are attended to. (1) The wood should be smooth and free from sawdust or splinters on the surface; sand-paper will generally put this matter right. (2) The wood should be as dry as possible. If made-up frames are to be stained, it is a good plan to leave them over-night a couple of yards away from the kitchen fire. Then, in the

morning, they will generally be workable—*i.e.*, if the wood is previously in a fair condition. (3) The staining material should be applied as evenly as possible. For this purpose we may conveniently use a cheap camel-hair mop-brush. The stain should be put into a jam-pot or tumbler, and not too much at a time, but enough to fully charge the brush. The way to get even results is to apply a brush full of stain in the same way that one applies water colour to a sheet of paper to get a flat tint. A steady, slow motion and tilting the frame enables one to stain each part evenly, without going over it twice with the brush. (4) As soon as the stain has had time to thoroughly penetrate the surface of the wood, the remaining surface-moisture should be dried off by evaporation as quickly as possible. If this be not done, the danger of warping the wood and opening the joints is increased. Obviously then in staining, we should aim at applying only just enough to give a surface stain to the wood. It is far better to give two or more coatings, allowing each one to dry thoroughly before the next is applied, than to attempt a deep colour at one operation by applying much fluid. The best way to dry a frame is to put it in a strong draught of warm air, *e.g.*, between the open window and a door, or before a brightly burning fire, but of course not near enough to make the frame hot. If the frame

is to receive a second wash of colour, it is a good plan to go lightly over the first when quite dry with a bit of old, well-worn, fine sand-paper, so as to remove any small fibres that may have started up from the first wetting.

It now only remains to give a selection of staining mixtures, and to suggest that each one should be tried first on a spare bit of moulding and allowed to dry thoroughly before a frame is stained, or one may get a colour which looks all right when wet, but is very disappointing when dry. In nearly every case the dry wood looks decidedly darker than when wet, and not seldom changes slightly on exposure to daylight. Wood-stains by various makers and in several colours can now be bought, but not seldom the amateur prefers to prepare his own solutions a small quantity at a time. Appended is a string of receipts which for the most part have been suggested by practical men, or arrived at by experiment.

BLACK. EBONY.

1. Silver nitrate, one in twenty. This stains the fingers, and yields only a brownish black. Exposing the wood to strong sunlight helps the blackening process.

2. Dilute sulphuric acid, one in ten. Apply and dry before the fire. Result gives a brown black.

This destroys the clothes, and should not touch the fingers.

3. Aniline black. Nigrosine, dissolved in water, yields a good black.

4. Make a strong solution of sulphate of iron (green vitriol) and also another of tannic acid, and apply alternately.

5. Boil an ounce of logwood in half a pint of water, and add ½ dram of iron sulphate, and an ounce or so of rusty iron filings ; strain and apply.

6. Add a handful of rusty nails to ½ pint of vinegar and stir from time to time. Then add a few nut galls, and warm to a gentle simmer. Strain and apply.

7. Break up a couple of nut galls and simmer in half a pint of water. (If a red-black be wanted add a few logwood chips.) Then add about a teaspoonful of powdered sulphate of iron (copperas, green vitriol). Stir well and strain.

Black Varnish.

8. Dissolve 15 grains of borax in 1 ounce of warm water, then add 30 grains of bleached shellac, and about 10 drops of glycerine. Heat until the mixture begins to simmer and add 50 grains of nigrosine.

9. Lamp-black ground up in ordinary shellac varnish also yields a good result. The best results

are obtained by staining first and then polishing separately.

Green Stains.

10. Make a strong infusion of Persian or French berries and add sulphate of indigo to the required tint.

A.

11. Indigo	...	...	...	... 1 part
Vinegar	...	...	...	... 20 parts
Water	...	...	...	... 20 „

B.

Verdigris	...	...	...	... 1 part
Vinegar	...	...	...	... 10 parts

Prepare A and B separately, warming gently to assist solution.

A and B are then mixed in the proportions suitable to yield any desired range of green more or less blue.

Blue Stain.

12. In an open vessel—*e.g.*, a *thin* tumbler—place 4 parts of sulphuric acid and add slowly 1 part of indigo. When dissolved this is added a little at a time to water, until the desired paleness of tint is acquired.

Giessen's patent liquid blue, now obtainable in small bottles at most "Oil Shops" for a few pence, will be found an exceedingly useful colour in combination with others.

Yellow Stain.

13. Infusion of Persian berries yields a yellow solution which may be used. Some workers recommend the addition of a small quantity of the following :—

Nitric acid	... 20 parts
Prismatic (grain) tin	... 1 part

13A. Saturated solutions of Potassium chromate or bichromate give feeble yellow stains.

Red.

14. Boil an ounce of logwood chips in half a pint of water, and add a small quantity of the tin in nitric acid solution given in No. 13.

Infusion of camwood or red sanders wood also yields a red stain.

Orange.

15. Various shades, from red to yellow through orange, may be obtained by applying separately the yellow and red stains given alone.

Purple.

16. Various tints, ranging between red and blue, may be obtained by combining different proportions of the logwood infusion (No. 14) and the indigo sulphate solution (No. 12).

Rosewood Stain.

17. (*a*) Boil 4 oz. logwood in 1½ pint of water until a dark red colour is obtained. Then add ¼ oz. salts of tartar. (*b*) Boil 1 oz. logwood chips in half a pint of water and add 1 dram of pearlash. First apply *a* evenly as a ground, then with a thin, flat hog-hair brush cut into teeth, apply *b* so as to give black or nearly black streaks.

Walnut Stain.

18. To 5 oz. strong ammonia add 1 oz. (powder) Vandyke brown, and apply with a brush.

19. Of potassium permanganate dissolve 10 grains in one ounce of water.

Pot. bichromate	...	...	4 grs.
Vandyke brown	...	...	40 „
Washing soda	...	...	10 „
Water	...	...	1 oz.

First mix the Vandyke brown powder with a few drops of water, with a knife on the back of a dinner plate; then add to the rest of the water.

Mahogany Stains.

20. Dragon's blood ... ... 1 part
Alcohol ... ... 20 parts

To this may be added say ¼ or ½ part of soda carbonate.

A.

21. Burnt sienna ground in water ... 1 part
Water ... ... 10 parts

B.

Glue (best French) ... ... 1 part
Water (warm) ... ... 10 parts

Mix A and B.

22. Venetian Red ... ... 4 parts
Glue ... ... 1 „
Water ... ... 40 „

Stain To Convert Light Into Dark Mahogany.

23. Potassium bichromate ... ... 1 part
Water ... . 100 parts

Oak (Brown) Stains.

24. Pot. bichromate ... ... 1 part
Water ... . 20 parts

25. Pot. bichromate ... ... 1 part
Vandyke brown ... ... 4 parts
Strong ammonia ... ... 20 „

26. Catechu ... ... 4 parts
Water ... ...100 „

Boil and add—

Soda carbonate ... ... 1 part

BRONZING WOOD.

27. Give an even coat of white varnish, and when tacky or nearly dry dust on the bronze powder and allow to dry.

BLEACHING WOOD, REMOVING STAIN.

28. Oxalic acid (N.B.—Poison) ... 1 part
Water ... ... 10 parts

In addition to the foregoing list it may be well to mention, that most oil shops now keep water stains in stock and will sell any small quantity. The most useful are walnut, oak, and mahogany. To these add, Giessen's liquid blue, ten per cent. solution pot. bichromate, three per cent. solution pot. per-manganate. With this lot one may get a great variety of tints in a very simple way. Also the penny packets of Judson's dyes are useful for staining wood in small pieces.

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